TWO GREAT SCOTSMEN.

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This volume is issued in commemoration of the centenary of John Hunter's death (October, 1793), and the title page was accordingly dated 1893: owing, however, to unavoidable delay, the book is only published now.

Glasgow, *5th February*, 1894.

TWO GREAT SCOTSMEN THE BROTHERS WILLIAM AND JOHN HVNTER

BY
GEORGE R. MATHER, M.D., F.F.P.S.G.

JAMES MACLEHOSE AND SONS
GLASGOW. MDCCCXCIII.

TO THE PRESIDENT AND FELLOWS

OF THE

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

WITH ADMIRATION FOR THEIR
DEVOTION TO THE PROFESSION WHICH
HAS BEEN SO HIGHLY EXALTED BY THE
BROTHERS HEREIN PORTRAYED, AND WITH FEELINGS
OF MUCH ESTEEM I DEDICATE TO THEM
THIS TRIBUTE TO THE GENIUS OF
WILLIAM AND JOHN HUNTER.

PREFACE.

In those charming days of student life, when first I wandered round the classic building which jutted into the old College Green, I had a desire to become familiar with the end and aim of that Grecian temple, for as such it then appealed to me. I anxiously inquired its purpose and had not long to wait for an answer. On matriculating, a card was presented, permitting me to enter with a friend the temple of science containing the Hunterian Museum. This noble building then was the stately storehouse of anatomical specimens and other treasures collected by one man, which for variety of riches has had no parallel in the annals of medicine. It was founded by the elder of two brothers, who had astonished the world by their scientific labours. Glasgow can justly claim those brothers as her sons, because they were born within sound of her Cathedral bell. William spent five years at her ancient University; John spent three years in a workshop of the city. They left their native country for London, and made their mark so indelibly on the time in which they lived,

that that period has been spoken of by Englishmen as 'the age of the Hunters.'

The vast intellectual labours of those great men have not attracted the interest they ought to have done in their native place, possibly because they are not fully known; should the present sketch of their lives, issued in commemoration of the centenary of the younger brother, lead to a keener appreciation of their public services, I shall be abundantly satisfied.

I have to express the great pleasure I have had in communing with the illustrious band of writers and orators who have done so much to extend the name and fame of the brothers Hunter. To Professor Gairdner I acknowledge my obligations for the privilege of extracting from Dr. Reynolds' "System of Medicine," his lucid and masterly description of the case of John Hunter. I would also express my thanks to Mr. D. Y. Cameron for the interest he has taken in the work, and my admiration of the glamour he has thrown around the scenes he has so finely etched. To Mr. Annan I owe thanks for the artistic manner in which the photogravures have been executed; and to Mr. Tweed for his medallion of John Hunter reproduced in the volume.

GEORGE R. MATHER.

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CHAPTER I.

INTRODUCTORY.

It has been said that the world knows nothing of its greatest men. This is peculiarly true of our own little country, Scotland, whose great men have by no means been rare, and have in many cases been overlooked.

It is not known to a tithe of the men you meet, that a small Scotch farmer, who more than a century ago tilled the soil within a very few miles of Glasgow, had two sons who raised themselves to the very highest position possible for men to reach in connection with science, and the profession which they adorned; and not only so, but conferred blessings of a priceless, imperishable kind on the whole human race.

William and John Hunter, who so distinguished them-

selves in London in the middle and end of last century, and who have left behind them in their vast and varied collections, triumphs of their skill and genius, which are the admiration of the scientific world, were sons of John Hunter of Long Calderwood, East Kilbride.

The object of this biographical study is in some small measure to illustrate the lives of these great men ; to show how that by elucidation and most tangible expression in almost countless specimens of the ways and workings of all-various nature, they have in the museums which bear their names reared monuments of industry and scientific knowledge which place their founders in the highest rank of fame.

Of course, to William Hunter, of the two brothers, the general public are mainly indebted, but not entirely so, for John devoted ten years of his life to helping forward the work of William's museum. But it would be akin to sacrilege for us to discrepate between the two brothers, or to magnify one at the expense of the other. Their work in connection with science is one and indivisible ; these men still live and speak through us, the heirs of their achievements. For the literary, artistic, and numismatic treasures, which are of inestimable value, we are no doubt wholly indebted to William Hunter.

The Commissioners appointed to deal with the Scottish

Universities lately issued an Ordinance regarding the Hunterian Museum which cannot be referred to without feelings of astonishment. By empowering the sale of the Hunterian coins, they proposed with the one hand to endow a Chair of History, and with the other to scatter to the winds the materials by which history is constructed, the very basis on which history is founded. Thanks to the Lord Provost of Glasgow, and a strong expression of public opinion, led by Dr. David Murray, this fatal policy has been abandoned.

It cannot be objected to this biographical sketch that too many volumes have appeared on the subject; for we have searched in vain for a single pamphlet issued from the Glasgow press telling the story of the Hunters, while in London there is *embarras des richesses.* You come across oration after oration, delivered by the presidents of the Royal College of Surgeons annually, and latterly biennially, almost since his death—one hundred years ago—on their patron saint, John Hunter. Even in Edinburgh we picked up a polished essay entitled, "Only an Old Chair." The inspiring influence on the man who wrote it —a brother of John Goodsir—was that the chair once belonged to John Hunter. Moreover, our American cousins have been invited, in a splendid oration on John Hunter by the great Gross of Philadelphia, to lay a wreath of im-

mortelles on the grave of the distinguished physiologist in this year, the centenary of his death. Are we, in the country of their birth, on such an occasion, to take no notice of those distinguished brothers who have shed upon us such renown? Shall we stand idly by whilst the world is eager to do them honour?

Professor Gross says of John Hunter, "Nearly one hundred years have elapsed since the death of this remarkable man, this apostle of surgery, this high priest of nature. When the century shall be completed, it will be a fitting act to place upon his tomb a wreath of immortelles, commemorative of the event, and of the high sense of gratitude for the services which he rendered to mankind. Although Hunter is dead, the spirit which animated him will live in all future ages to encourage and to stimulate the student of surgery, of science, and of human progress. His career affords an illustrious example of a man of great intellectual powers triumphing over early defective training, and marching onward, step by step, despite vast obstacles, to the highest pinnacle of human greatness." This is a glowing panegyric upon John, the younger brother. When we recollect that more than a quarter of a million of money has been expended by Government and the Royal College of Surgeons on his museum, and that quite a number of the finest minds

of the century, including Sir Richard Owen, lately deceased, Sir James Paget, one of the greatest living surgeons, and many more, have laboured (Owen for thirty years) interpreting the vast collection by catalogues and otherwise, is it matter for wonder that posterity should be entranced with the genius of this man? But why should his brother William be forgotten? Is it that a prophet has no honour in his own country? He was the pioneer; if it had not been for William we never could have had John; and when we think of the treatment his museum has received from the authorities of the University of Glasgow, since their acceptance of the princely gift, is it a marvel that he has been in a measure overlooked? It is certainly no surprise to learn that the far-seeing William offered his varied treasures to London. His museum has been treated merely as a historical collection, without regard to its teaching power. Surely this was never the intention of the founder, who was *facile princeps* of the anatomical teachers of the world, and who presented the museum to Glasgow, which cost £100,000, with £8000 for its preservation and increase. What, again, says Professor Gross? — "In midwifery William Hunter stood pre-eminent. His *Anatomy of the Human Gravid Uterus*, a magnificent folio volume on which he was engaged for nearly thirty years, alone was sufficient

to ensure his immortality. As an anatomist he also ranked very high; more learned than John, and not less industrious, he was distinguished for his urbanity and the polish of his manners, and occupied for many years the loftiest position as an obstetrician in England. William Hunter was the founder of the Anatomical Theatre in Great Windmill Street, the nursery for three-quarters of a century of great anatomical teachers. He was also the first man who ever delivered systematic lectures on surgery in London, anticipating his brother by a number of years."

Thus, then, the fact of the greatness of the brothers Hunter is thrust upon us even by the stranger. Verily they were twin stars of the first magnitude, and William was the elder-born.

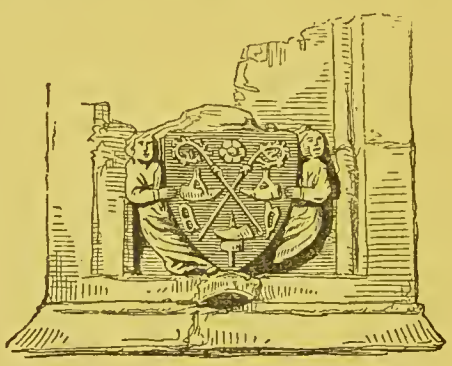
William Hunter was educated at the University of Glasgow. To his scholastic training and associations we attribute the proud position the brothers reached. William took his place easily amongst the first scientists of the day, and so moulded John by his influence that he was also able to introduce him to the same sphere. It well becomes us to take this and every opportunity of doing honour to the memory of our great brothers, for they have exalted us. Their genius, their labours, and their public services, shed a lustre on our country, raising its

intellectual and scientific character; while their names are conspicuous on that bright roll of master minds, the proud inheritance of our land and of our race, whose influence and whose fame, extending over the whole globe, are destined to last as long as man advances and the ages roll on.

CHAPTER II.

FAMILY HISTORY.

THE history of the very ancient family of the Hunters is well worthy of study, as it affords abounding interest. That part of it which throws light on the ancestors of our illustrious brothers is given here, with the authorities from



whose works the facts have been culled. The coats of arms are worthy of being looked into, as each in itself contains a miniature account of the origin of the family. The most ancient, taken from Melrose Abbey, and repro-

duced in this woodcut, is that of Abbot Andrew Hunter, who was confessor to James II. The varieties used by William and John Hunter were probably got from the Lord Lyon King at Arms.

Hunter is a surname obviously derived from the chase, and from the great superiority of the Normans in the sports of the field. It is supposed, on good grounds, that the families of this surname in Scotland are of Norman extraction. They are accustomed to carry in their armorial bearings three dogs of chase with three hunting horns. "In the castles and domains," says Robertson, "of the great barons who were lords of entire Bailiwicks," appropriated frequently for the accommodation of the sovereign, it appears that various offices exclusively belonging to the sports of the field existed. Johne le Huntar, de la Fouste de Paisley, and Hugh and Richard, the Hunters of Stragrife, Renfrewshire, appear on the Rag. Roll (*Caled.*, vol. iii., p. 118), as also does Aylmer de la Hunter of the county of Ayr (*Ayrshire Families*, vol. iii., page 168). The office, whatever it was, held by the original bearers of this name, is supposed to have been similar to that of forester, from the fact that the motto of the Foresters of Corstorphine was, "Hunter blow your horn." In the remarks of the Ragman Roll, the Aylmer de la Huntar above-mentioned is said to be the ancestor "for certain of the Hunters of

Ardneil, designed of Hunterston, and of that Ilk." Nisbet (*System of Heraldry*, vol. i., page 382) says, "As for the antiquity of the name, Gulielmus Venator (which I take for Hunter) is a witness in the charter of erection of the Bishopric of Glasgow by David I., when he was Prince of Cumberland."

The most ancient families of the name in Scotland were the Hunters of Polmood, in Peeblesshire, and the Hunters of Hunterston in Ayrshire. With regard to the former family, which is now extinct, Dr. Pennicuik, in his *Description of Tweeddale*, has inserted a copy of a translation of a charter claiming to be from Malcolm Canmore to the ancestor of the family, which is certainly framed on the traditionary story of the origin of the family, and in that light possesses considerable interest. It is in these words:—I, Malcolm Kenmure, King, the first of my reign, gives to thee, Normand Hunter of Powmood, the Hope up and down, above the earth to heaven and below the earth to hell, as free to thee and thine as ever God gave it to me and mine, and that for a bow and broad arrow when I come to hunt in Yarrow; and for the mair suith I byte the white wax with my tooth. Before thir witnesses three—May, Mauld, and Marjorie." This title of Malcolm Canmore's is as comprehensive in regard to space as that of Nethan, king of all the provinces of the Picts, is in regard to time, when he

gave as an offering to St. Bridget "Aburnethige (Abernethy) till the day of judgment."

Of the Hunterston line, Crawford (*Officers of State*, p. 360, note), says that he had very carefully perused their writs, and that from charters they appear to have had at least a part of the estate they possess in Cunninghame, while the Morvilles were lords of that country as far back as the reign of Alexander the II., between 1214 and 1249.

From Mungo or Kentigern Huntar, the tenth in possession of Huntarstoune, and the ninth in direct descent from Norman le Huntar above-mentioned, descended the Hunters of Abbotshill, and many prominent men in that direction. Mungo Huntar's eldest son, Robert, succeeded to the estate, and was one of the Ayshire gentlemen who subscribed the Principal Band in defence of the reformed religion, 4th September, 1562. His grandson, Patrick Hunter of Hunterston, was a member of the Committee of War for Ayrshire during the troubled time of 1647, and in 1662 he was fined £600 by one of the arbitrary acts of the Earl of Middleton. His third son, Francis, was the ancestor of the Hunters of Long Calderwood, in Lanarkshire. The male line of the family of Hunterston terminated with Robert Hunter, who died in 1796, leaving a daughter, Leonora, who married her cousin, Robert

Caldwell. He assumed the name of Hunter, and in his wife's right became proprietor.

Hunterston, the original estate of the Hunters, is situated in the district of Cunninghame, in Ayrshire, near the coast, about one mile and a half from Southannan. It is in the parish of West Kilbride, so called to distinguish it from East Kilbride, in Lanarkshire. West Kilbride is a beautiful parish, extending nine miles along the coast. The shore is low and shelving, and there are long stretches of sand when the tide recedes. At Portincross promontory there is a remarkable headland ; the coast rises steeply to a height of nearly 500 feet above the sea level. The rocks here are fine, consisting of old red sandstone, surmounted at intervals by a rich brown porphyry. Inland the surface rises to above 1200 feet at Kame Hill, and there are rolling ridges with other isolated hills. Some of these are green to their summit, and command magnificent views of the waters and screens of the Firth of Clyde, and they embosom various romantic little vales.

The old fortlet or castle of Hunterston, with its tower of great antiquity, is still entire, although occupied now only as a farmhouse. The estate is finely wooded, which gives the old place a picturesque and interesting appearance. This family seems to have held these lands in connection with an office relating to the chase, in the

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semi-regal establishment of the district. The Hunters were also the heritable keepers of the island of Little Cumbrae, and eventually they became its possessors. In a royal charter is recorded a grant by King James V., dated 31st May, 1527, by which the island of Little Cumbrae is conferred on Robert Huntar of Hunterstoune and Jonet Montgomerie his spouse and their heirs, "of which islands and lands, with pertinents, the said Robert and his predecessors were in times past the hereditary keepers."

The only portion of the parish which, from its earliest division in the twelfth century, has remained unalienated, is the seat of the Hunters of Hunterston, or of that Ilk. The learned author of *Historical Notes to Pont* truly remarks, that it is certainly pleasing to find this very ancient family have ever continued in possession of this, their original territory, through direct hereditary succession down to the present time, a period of at least eight centuries, whilst most of the principal barons and great landholders under de Morville have long utterly disappeared, and have been forgotten in their wide domains and proud feudal prerogatives. But let us not imagine that the Hunter family was without vicissitudes. Paterson, in his *Ayr and Wigton*, tells of one Patrick Hunter of Hunterston or of that Ilk, who having at a meeting of gentlemen at

Largs on July 1st, 1689, acknowledged a leaning towards King James II., would have been treated as a rebel but for the timely interference of Crawfurd of Kilbirny, who broke his sword, and privately wrote to his father, the laird of Hunterston. Hospitable and extravagant, it was not until he had alienated a considerable portion of the estates of the family—and they had wide possessions—that he was induced by Lord Glasgow to execute a conveyance of his rents of Hunterston to his eldest son Patrick. The deed reserves only his maintenance in the house of Hunterston in bed, board, and washing, as circumstances will allow. This curious document, from Hunterston Charter Chest, was written by David, Earl of Glasgow, and subscribed at Kelburn House on the 3rd June, 1729.

The estates were deeply encumbered when Robert Hunter (the second son) succeeded, but by his prudence and economy he was enabled, long ere the close of his life, not only to clear off all encumbrances, but likewise to leave his successors in comparative wealth and independence, and thus he might well be viewed as a second founder of his ancient family. In physique and mental calibre the Laird of Hunterston appears to have been a true Scottish baron of the best period, reminding one of Scott's graphic delineation of the barons of Bradwardine.

Opposite Hunterston is the island of Big Cumbrae, which

would seem from the following minute of the Privy Council of Scotland, to have been at one time famous for its breed of hawks :—" February 2nd, 1609. Sir William Stewart, captain of Dumbartane Castle, complains, 'That Wm. Huntar of Huntarston, and Thomas Boyd, Provost of Irwyn, had gone to the Isle of Comra, with convocation of the leidges, and tane away all the hawks thereon,' the lords of secret council declare, 'That all the hawks quhilk bred on ye said ile do properly belong to his Majeste, and that the captane of Dumbartane Castle intromet tharewith yeirlie, and deliver the same to his Majeste, and discharges the said Robert Hunter, and otheris, from middling tharewith.'" The ancient mansion-house still stands quite near to the Castle of Arnele, now Portincross, a famous spot, where charters of the first and second Stuarts received the sign manual of "Arnele." The promontory here being one of the most westerly points in the Lowlands of Scotland, and lying conveniently between Edinburgh and Iona, and between Dundonald and Rothesay, the castle was probably a halting-place of the Scottish kings on embarking either for Bute, or for the burying-place of their Scottish ancestors. A short distance from Portincross Castle, in ten fathoms of water, sank one of the largest ships of the famous Spanish Armada. One of the cannons of this ship is now mounted on the Castle green. The old tower

a small estate consisting of one farm, situated about one mile north of the rural village of East Kilbride. Adjoining are the lands of Calderwood Castle, the property of the Maxwells, a family almost as ancient as the Hunters, for the Maxwells of Calderwood have been connected with the parish of East Kilbride since the reign of Alexander III. The Stuarts of Torrance have also been very long connected with the parish, and these families have frequently given to the nation men of distinguished ability. The estate of the Maxwells has within the last year or so passed into other hands, the family having become extinct. Now we have "new men and old acres." But the estate of the Hunters is still in the possession of their descendants.

Long Calderwood is a good stone house of two stories, situated near the road leading from East Kilbride to Blantyre, quite like the residence of the laird of the small estate. The house has the appearance of having been all along the abode of "bein," substantial people, and has behind it a fine large court, enclosed by farm buildings, showing that the laird himself tilled the soil. There are, not many yards along the road, some small houses of one story high, which went no doubt to form the township. It has been said by some people that it was in one of these the brothers Hunter were born. This opinion has

been formed chiefly on account of some letters on the lintel of the door, and on the back window of one of these cottages, in which the letter H is prominent. On lintel, C H. 1642 E H.; back window, A H. E. E. But these houses do not belong to the estate, nor have we any evidence that they ever did. Moreover, a most competent authority, Mr. Hunter Baillie, the present proprietor, the son of Dr. Matthew Baillie, in a most courteous letter to the writer, on this subject, states, "The Hunters were both born in the farmhouse on Long Calderwood Farm, now tenanted by Mrs. Dick, as all our family have thought and said." This statement dispels the illusion of another "auld clay biggin'" such as that which came to grief on that eventful night when our Ploughman Bard was born.

The birthplace of the Hunters is well worth a visit by those who admire those scientific men, of whom the world is justly proud. Long Calderwood is about seven miles from Glasgow, and is reached by a delightful road, the ascent of which is considerable, but quite easy for the journey afoot. A magnificent view of the Vale of Clyde and the City of Glasgow is to be had from this road, as you ascend the shoulder of Dychmont Hill. The surface of the country is beautifully diversified by hill and dale, and the prospect is extensive and grand. On a clear day,

Tinto, Arthur's Seat, in the neighbourhood of Edinburgh, Ben Ledi in Perthshire, Ben Lomond and the Alps of Arrochar, and the Peaks of Arran, are all within view. Here long blazed the Beltane Fires. But this hill of Dychmont is otherwise associated with our story. It introduces us to a fine trait in the family character of the Hunters. "Dychmont," a poem descriptive of the numerous beauties of this hill, was written by John Struthers, a native of East Kilbride, the author of the "Poor Man's Sabbath," and other poems of great merit. He was the son of a poor cobbler and was very delicate. His mother was anxious to educate him at the parish school, but her struggle with poverty was too keen to permit of this. John was sent "to herd kye" on the hillside, where the cold sleety winds of the uplands would soon have quenched the vital spark, which at the best was feeble. Happily for the lad, Mrs. Baillie, a sister of the Hunters, who, after the death of her husband resided at Long Calderwood, came to his rescue. She saw the boy was no common herd laddie, that his soul was "touched to finer issues." This good lady kept him at school, where he made rapid progress. She often invited him to her house, conversed with him, told him amusing stories, made him read to her, and she often read to him, whilst the young ladies delighted him at times with the

music of the spinet. Surely here was "meet nurse for a poetic child." This friendship was not forgotten, for Joanna, one of the young ladies, long after she became famous, sought out and called for John Struthers in his little house in the Gorbals of Glasgow, where she found him working at his trade, that of a shoemaker. Mr. Struthers himself tells us in his Memoirs how this visit affected him. "In the year 1808, he had the high honour and singular pleasure of being visited at his own house in the Gorbals of Glasgow by Joanna Baillie, then on a visit to her native Scotland—who had known him so intimately in his childhood. He has not forgotten, and never can forget, how the sharp and clear tones of her sweet voice thrilled through his heart when at the outer door, she, inquiring for him, pronounced his name—far less could he forget the divine glow of benevolent pleasure that lighted up her thin and pale but finely expressive face, when, still holding him by the hand she had been cordially shaking, she looked around his small but clean apartment, gazed upon his fair wife and his three lovely children, and exclaimed, 'that he was surely the most happy of poets.'"

Having viewed from the grand standpoint this hill affords the magnificent panorama of valley and Ben, woodland and stream, one of the most extensive in the

West of Scotland, we pursue our course through a rich pastoral country, and soon arrive at Long Calderwood, the natal spot of the Hunters.

In the beginning of the eighteenth century the proprietor or laird of Long Calderwood, John Hunter, also tilled the ground. The farm was valued then at one hundred and eighty pounds per annum. A Scotch laird, albeit a small one, was a man of no little repute in those days, and the treasurer of the City of Glasgow, Mr. John Paul, thought it an honour to give him the hand of his daughter in marriage. Miss Paul made Laird Hunter a happy man, and blessed him with a family of ten children, five of whom died young. James, born in 1715, was bred a lawyer; William was the seventh of the family; John was the youngest of the three sons who survived; Janet, the eldest daughter, married Mr. Buchanan, cabinetmaker, Glasgow; Dorothy married the Rev. James Baillie, afterwards D.D., and Professor of Divinity in the University of Glasgow. She was the mother of the justly celebrated Dr. Matthew Baillie, Physician to the King, and of the gifted Joanna Baillie. Sir Walter Scott called her "the immortal Joanna." The Great Unknown found in her a congenial spirit, and as time proved, an enduring friend. His letters to her are well known to be among the most charming he ever wrote.

CHAPTER III.

WILLIAM HUNTER—HIS LIFE.

A BRIEF epitome of William Hunter's career may suffice for the present purpose. He was the seventh child of the family, and was born at Long Calderwood, on the 23rd of May, 1718. He was educated at the parish school, and evidently was a precocious boy. In November, 1731, at the age of thirteen and a half years he entered the University of Glasgow. He studied there for five years. He held a bursary of the Bajan Class of the value of ten pounds a year, for four years. The term Bajan was employed in the French and Scotch Universities, and is evidently a corruption of *bec jaune* (yellow beak), an expression meant to designate a nestling or unfledged bird. The epithet (Bejants) is still applied to freshmen in St. Andrews. It had been his intention to enter the Church, but he did not long pursue his theological studies, if, indeed, he ever fairly began them.

It was long the ambition of almost every Scotch

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parent to have his most promising son "wag his pow in a pu'pit." The people of Scotland were educated in the parish school, and on the Sabbath day they got food for thought from the pulpit, and went home discussing the sermon. To this fact, no doubt, is due in a large measure the proud position Scotland occupies in the eyes of the world. If old Mr. Hunter had hopes of seeing his son William a bright and shining light in the Church, he was doomed to disappointment. When William left college he had the reputation of being a fair scholar; indeed, his qualifications were such that he was a candidate for the situation of schoolmaster in his native parish. He was fortunately rejected. There might be some ground for moralising over the fact. Had he actually obtained the office, would he nevertheless have made his way by force of God-given and directed power to the place assigned for him, or, as Byron has it, would he have felt misplaced in life?—

> "I know not what I could have been, but feel
> I am not what I should be."

About this time William Hunter made the acquaintance of Dr. William Cullen, who afterwards became famous as a physician. He imbued Hunter with a love of the medical profession, and took him into his family to reside with him at Hamilton, where Cullen was then in practice. They entered

into a kind of nascent partnership, with the intention of allowing each other to attend the medical classes during alternate sessions. Dr. Hunter always looked back on the three years he spent with Dr. Cullen in the quiet country town as the happiest period of his life. Dr. Cullen, to attain the position he now held, had struggled very hard. Born in humble circumstances, he had an intense desire to enter the profession in which he became so distinguished. Fortunate it was for William Hunter that he crossed the path of William Cullen, the country surgeon, who inspired him with ardent love of the same work, and insatiable longings for a like career. Dr. Simmons, the able biographer of Hunter, reports what Dr. Cullen said to him of young Hunter at this time, that his conversation was remarkably lively and agreeable, and his whole conduct was more strictly and steadily correct than that of any other young person he had ever known. This sprightliness, combined with prudence, appears to have characterised William Hunter through life. Fortunately for the world he was ambitious, and wisely so,—conscious no doubt of his own special gifts; and so, after attending the lectures of Dr. Alexander Monro, in Edinburgh University, in 1740, he did what our English friends say we Scotchmen are prone intuitively to do, gravitated southwards, and, at the age of twenty-three, settled in

London in the year 1741. He took up his residence at first with Mr., afterwards Dr., Smellie, a Scotchman, from Lanark, recently settled in London, an enthusiast in the science and practice of midwifery, and a genius of obstetrics, whose works are recognised to have such value that the New Sydenham Society have republished them.

Hunter carried with him introductions to several eminent scientific men in London,—notably one from Robert Foulis the famous printer to the University of Glasgow. He was greatly indebted to his Alma Mater and the friends he made whilst studying there.

Glasgow was primarily a scholastic city, the seat and home of learning, and, notwithstanding that the roar of commerce is in all her streets, she is so still. "An ancient seat of learning," says John Inglis, "placed in the heart of a great commercial city, is indeed a spectacle of striking interest, suggestive of curious and instructive speculation." Here, alone, for centuries learning and commerce have dwelt side by side, and made progress hand in hand, without any other bond of union than the accident of juxtaposition. Glasgow owes much to her University.

The Scotch Universities are not conducted on the same expensive scale as are those of England, but are so constituted that persons of very moderate means may enter them.

Thus a much greater proportion of the people of Scotland receive a University education than those of England. It is the common practice to attribute every beneficial change that has taken place in Scotland to her union with England; but a mere union would have been of little avail had Scotland not possessed in herself the germs of future prosperity in the excellence of many of her institutions and the enterprising character of her people.

The Universities are much prized by the people: the words of one of the most useful, brilliant, and genial of Scotchmen show the admiration in which they are held. Henry Cockburn, in his rectorial address, says, "If the vanity of my fancy had ever permitted me to imagine that I could occupy any high place in a seat of learning, it would certainly have selected a Scotch University as the scene of its dream." Adam Smith bears noble testimony to the benefits conferred upon him by his Alma Mater. In a letter to Principal Davidson, of Glasgow University, on the occasion of his being elected to the Rectorial Chair, he said, "No preferment could have given me so much real satisfaction. No man can owe greater obligations to a society, than I do to the University of Glasgow. They educated me, they sent me to Oxford. Soon after my return to Scotland they elected me one of their own members, and afterwards transferred

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William Hunter, M.D. F.R.S.

me to another office. The period of thirteen years which I spent as a member of that society I remember as by far the most useful, and therefore as by far the happiest and most memorable period of my life; and now, after three and twenty years of absence, to be remembered in so agreeable a manner by my old friends and protectors gives me a heart-felt joy I cannot easily express to you."

Glasgow University is above all praise for the direct encouragement given to science and the arts, as also to inventive genius at this time. Very early in the eighteenth century, two prominent figures in literary circles were the brothers Foulis, the highly celebrated Glasgow printers. One of them, Robert, had immense influence on the career of William Hunter. They were printers to the University, and held apartments from the College in which their business was carried on. The brothers Foulis, of whom, like the Hunters, too little notice has been taken by their countrymen, continued to bring out for thirty years a series of classics which, whether in Greek or Latin, are as remarkable for their beauty and exactness as any to be found in the Aldine Series. Even Bodoni of Parma, and Barbou of Paris have not surpassed some of the works of the Foulis' press. But they were not merely printers, they were devoted to the fine arts, and were allowed the Faculty Hall, immediately above

the gateway of the College, as an exhibition room for their paintings. On Glasgow Fair days there was usually an exhibition of pictures in the outer quadrangle of the College, where the works of art were exhibited to the public free of charge. The brothers Foulis founded an academy for the study of the fine arts—such an institution having been hitherto unknown in Scotland. They were, however, in advance of their age; Glasgow was not ready for this new departure, and the ample fortunes amassed by printing the Greek and Latin classics were lost in the venture. Although the sanguine hopes of the Foulis's were not realized, yet they created a spirit for the cultivation of the fine arts in Glasgow which is now bearing abundant fruit.

From Robert Foulis, William Hunter first derived his love of books, and of the fine arts. By means of his artistic taste, thus fostered and encouraged, he was introduced into the art world of the Metropolis, and became associated with the first men of the time connected with art—such men as Sir Joshua Reynolds, Gainsborough, and William Hogarth. From Robert Foulis also he obtained the introduction to Dr. James Douglas, of London, which was the first step in William Hunter's splendid career in that city. Dr. Douglas, who was also a Scotchman, being at that time engaged on a large anatomical work on

The Old College, Glasgow

the bones, had found William Hunter's services very useful, and was anxious to engage him as his assistant. He was also invited by Dr. Douglas to enter his family as tutor to his son. Hunter at once communicated with his father and Dr. Cullen. The latter, we are told, readily and heartily gave his concurrence to the proposed engagement; but his father, who was old and infirm, consented with a show of reluctance to a scheme the success of which he thought precarious. Old Mr. Hunter wrote his son a letter at this juncture which is worthy of being quoted, as it shows the strong individuality of the man—a genuine hard-headed old Scotchman, thoroughly accustomed to weigh the *pros* and *cons* of a position, even to his own hurt. He writes—"Nothing has proved a greater comfort than the hopes of seeing you here soon, but your letter has been a very great damp to us all. I think you have been in a very extraordinary manner obliged to Dr. Douglas, and whatever opinion I may have of his present offer, or however unwillingly I may consent to it, still I must thankfully own it as a particular instance of his kindness to you. I surely must soon expect to be beyond this side of time, considering my age and present indisposition, being for some days confined to bed with sickness and a severe fit of the gravel, and would be glad to have you near me for the

little while I shall be in this world, though at the same time I should be sorry to hinder you from making your way in the world the best way you can. I wish you to consider well what you do. With Dr. Cullen you may be very comfortably settled and make money, and if you miss this opportunity now you cannot be sure of it at another time. Dr. Douglas's offer is only for a time. He may die before you are settled, and leave you without friends at a great enough uncertainty. I suppose, now, you know very well the difference of expense of living at home and abroad, and that perhaps clothes and pocket money may cost you more than your whole expense at home would do. You know my willingness to assist you, but you know too that I have gone fully as far already as my numerous family will allow of; you must now do something for yourself. Consider all these things, and if you can persuade me that it is for your good, I will not be against it." His father did not long survive the writing of this letter. It is dated at Long Calderwood, July 28th, 1741, and he died on the 30th October following, aged 78 years. Any one who reads this letter from Mr. Hunter to his son will be convinced that the stock from which William Hunter was descended was of no ordinary character.

Dr. Douglas, with whom William had taken up his

abode, was an able anatomist, as well as a kindly man, and one well competent to advise and instruct the youth at the beginning of his career. By his aid William Hunter became a surgeon's pupil, and a dissector in St. George's Hospital, studying at the same time experimental philosophy. Thus early, through the kindness of his patron, Dr. Douglas, he had some of his preparations engraved on account of their accuracy and beauty.

In the year 1743—he was then twenty-five years of age—Hunter made his first communication to the Royal Society, his subject being:—"The Structure and Diseases of Articular Cartilages." He anticipated what Bichat wrote sixty years afterwards concerning the structure and arrangement of the synovial membranes. This ingenious paper, on a subject which till then had not been sufficiently investigated, affords a striking testimony of the rapid progress he had made, not only in his anatomical inquiries, but in the study of surgery; and strange to say, although his chief ambition was to teach anatomy, it was as a lecturer on surgery that he first appeared. As he contemplated teaching anatomy, he did not precipitately engage in the attempt, but passed several years in acquiring such a degree of knowledge, and such a collection of preparations, as might assure him of success. He had already laid the foundation of his museum when residing

with Dr. Douglas, who did not live to complete his own great work.

William Hunter lost his father in 1741, and his patron in the spring of the following year. Dr. Douglas's death was a severe blow to him at this early stage of his professional career. This event, the probability of which his father pointed out to him, does not seem to have retarded his progress. He continued to reside with the doctor's family and to pursue his studies with the same diligence as before. Hunter had formed the resolution to teach anatomy, and by a happy chance he soon found a splendid opportunity of reaching what had been the ambition of his life.

Before commencing to lecture he consulted his teacher, Dr. Nicholls, a famous anatomist, as to the wisdom of his course. Nicholls endeavoured to dissuade Hunter from the project, as he thought him unfit for such work. This brings to mind Turner, the great artist, who, it is said, was dismissed by an eminent architect for his inability to learn perspective—a curious commentary by anticipation on his appointment many years afterwards as a Professor of Perspective to the Royal Academy. At this time, however, Mr. Samuel Sharpe, author of *The Critical Inquiry*, and other works on surgery, then lecturing to a Society of Naval Surgeons in Covent Garden, found it

necessary to retire from the lecturer's rostrum, and he did so in favour of Hunter. The young lecturer gave so much satisfaction that he was urged to teach anatomy, and undertook to do so. His first course of lectures was delivered in 1746. The quaint advertisement announcing the course, and which has an old-world flavour about it, is subjoined.

On Monday the 1st of February, at Five in the Afternoon,

WILL BEGIN

A COURSE of ANATOMICAL LECTURES. To which will be added, the Operations of SURGERY, with the Application of BANDAGES,

BY WILLIAM HUNTER, SURGEON.

Gentlemen may have an Opportunity of learning the Art of Diffecting, during the whole Winter Seafon, in the fame Manner as at Paris.

Printed Proposals to be deliver'd at Mr. Millar's, Bookfeller, opposite to the End of Katherine-Street in the Strand.

The story is told of his proudly carrying home his fees, amounting to a sum of seventy guineas, under his cloak, remarking to a friend by the way that it was the largest sum he had ever been master of. One thinks of another son of genius, Oliver Goldsmith, who, by the aid of Samuel Johnson, became the proud possessor of sixty pounds, for his *Vicar of Wakefield,* which "Noll" invested in the purchase of a

velvet suit and a gold headed cane and appendages, the balance going in champagne to his friends. Hunter made better use of his money by helping some needy students. This he did so liberally that, when the third course of lectures came to be advertised, he had not the means of paying the newspapers, whose rate of charge for such announcements was no doubt enormously greater then than now. But he never made the same mistake again, as he found that not only had he distressed himself, but had encouraged the idleness of his companions. As he always had an aversion to borrowing, he now determined to be cautious of lending money; and as Dr. Simmons says, by adhering to this prudent rule and strict economy, he was afterwards enabled to amass that great fortune of which he made so liberal a use. He joined the Corporation of Surgeons of London in 1747. Next year he visited the Continent with his pupil, the son of his late patron, Dr. Douglas; and this visit was not without profit. At Leyden he saw the Museum of the great Albinus, the first anatomist of his age, who held the Chair of Anatomy at the University of Leyden for nearly fifty years. Albinus took wonderful pains to ornament and render attractive his various anatomical preparations, but was never found to sacrifice the truth of nature to the beauty of delineation. The great beauty of these specimens served to stimulate

Hunter to further exertions. He also learned there the method of injecting the blood-vessels, the art which gave to the preparations their principal attraction. The Hunterian Museum at Glasgow University is the richer and the grander for the knowledge gained by William Hunter on this visit to Albinus at Leyden. The greatest number of the preparations in the Museum are still the admiration of men of science on account of their beautiful state of preservation, although they are considerably more than a century old. This tour through Holland to Paris was one of the only two short holidays which William Hunter allowed himself in the course of his incessantly busy life. The other, which shall be noticed in due course, was to his native place. He returned from his Continental trip in time for his autumnal lectures, when, as Sir Benjamin Brodie says, "he was joined by his uncouth brother, John." John arrived in the metropolis in September, 1748.

William had already attained considerable fame as a lecturer, for not only was his oratorical ability great, but he differed from his contemporaries in the fulness and thoroughness of his teaching, and in the care he took to provide for his students the best possible practical illustrations of his lectures. He was not only a sound, but he proved a brilliant, teacher. It is difficult for us now to conceive the importance of this course of anatomical

lectures. It was all that most students had, not on anatomy merely, but on physiology, medicine, surgery, and midwifery. Hunter tells us that at one of the most reputable courses of anatomy in Europe, which he himself had attended, the professor was obliged to demonstrate all the parts of the body, except the nerves and vessels shown in a fœtus, and the bones, on a single dead subject, and for the operations of surgery he used a dog!

Hunter states his object in lecturing, and we have abundant evidence that he carried out his purpose. He says, "I shall never aim at showing what I know, but labour to show and describe as clearly as possible what the students ought to know. To make a show and to appear learned and ingenious in natural knowledge may flatter vanity; to know facts, to separate them from suppositions, to range and connect them, to make them plain for ordinary capacities, and, above all, to point out the useful applications, is, in my opinion, much more laudable, and shall be the object of my ambition." His course was copiously illustrated by preparations. He advised his students to take notes, not during a first, but during a second course. He recommended them to spend time in the practical rooms during the first year, but not to dissect till the second year of study.

About this time we find him devoting the whole of

his energies to his professional labours and pursuits, and forming plans of great and varied extent and importance. In a letter to Cullen he says, "I want to tell you many things about colleges, hospitals, professorships, chariots, wives, etc., etc. I'm busy in forming a plan for being an author. In short, my head is full of—a thousand things." His plans as to marriage were amongst those he never completed.

At this period he determined by degrees to give up the practice of surgery, and devote himself to midwifery, a department in which he was always more enthusiastic, and the special anatomy of which had afforded him the greatest interest. This predilection was no doubt due in some measure to his intimate connection with Drs. Smellie and Douglas, both of whom had large practice in this branch of the profession.

He had not long to wait for appointments. In 1748 and 1749 he received two, first that of surgeon-accoucheur —then called man-midwife—to the Middlesex Hospital, and next to the British Lying-in Hospital, so that he enjoyed abundant opportunities of acquiring information in the branch of Medical Science he had selected. In 1750 he became a graduate of his own Alma Mater, the University of Glasgow, and in the summer of 1751 he revisited his native country, for which he always had

retained a warm affection. What reception he met with generally is not recorded, but by the profession in and around Glasgow his services to science were thoroughly appreciated, and the course he had carved out for himself was warmly applauded. The Faculty of Physicians and Surgeons, Glasgow, made him an honorary member. The following is an extract from the minutes of that corporation on the occasion of conferring this honour:—"March 4th, 1751. The Faculty in full form ordain a Diploma to be made out in favour of Dr. Hunter of London as an Honorary Member, and the same to be transmitted to him by the Preses and Visitor." From his old friend and teacher, Dr. Cullen, then rising to the zenith of his fame in Glasgow as a practitioner and lecturer, he received a cordial welcome.

Mrs. Hunter, who was no doubt proud of her son, was still living at Long Calderwood at the time of his visit. It was their last meeting, for his mother died on the 3rd of November of the same year. The small estate had now become the property of William, at the death of his brother James. During this visit he showed his attachment to his little paternal inheritance, as Dr. Simmons says, "by giving many instructions for repairing and improving it, and for purchasing any adjoining lands that might be offered for sale." Dr. Hunter had a great love

for the house where he was born, and the beautiful upland scenery by which on all sides it is surrounded. At this time he asked his dear friend, Dr. Cullen, to participate in the pleasure he felt in revisiting the old spot, with which both were so familar—

"All who joy would win,
Must share it,—happiness was born a twin."

This had been the scene of their early practice, and doubtless they enjoyed the pleasant memories it recalled, as Virgil has it, Olim meminisse juvabit—"It is sweet to recount dangers past." Seldom have two friends had such opportunity of congratulating each other on their mutual prosperity. Keenly alive to the beauty of the scenery, in what more choice manner could they revel in it than on horseback?—a mode of travel to which they had been so much accustomed, and which gives charm to familiar intercourse. Here was no mere Rotten Row ride, to be seen of men, although even under such circumstances horse exercise is not to be despised. Riding through an interesting and charming country, inhaling the fresh breezes, would not only brace up the physique, but the whole moral nature would be inspired by the historic scenes they were ever and anon passing through. We can fancy the two friends well-mounted, starting for a happy day. These riders were not novices on horseback. Experienced horse-

men, they were in the earlier days of their practice constantly in the saddle; light in weight, and lithe in limb, they could accomplish almost any distance. They had but set out from Long Calderwood when their gallantry bids them halt for a few minutes to ask for the health of a well-known lady, Mrs. Jean Cameron, who resided at the solitary house of Blacklaw — a lady of ancient and distinguished family. Her enthusiastic attachment to the Royal House of Stuart, with the efforts she made to sustain its fortunes in 1745, made her name a household word. She died in 1773, and was buried amid a clump of trees near her house. The place has since been called Mount Cameron.

After saluting this good lady, they in a short space come to the manse, and must needs pay their respects to the minister, for these were punctilious days. At this manse one is reminded of two famous young men, who breakfasted one spring morning with old Mr. French, the minister. Thomas Carlyle was intent on reaching Ecclefechan, and the other, Edward Irving, was giving him a convoy for fifteen miles or more, and then to return to Glasgow. Who that has ever read can forget the conversation between those two then unknown men, prophets both, strolling alone together over a Scotch moor; picture them to the mind's eye as Carlyle him-

self describes, "Irving and I, sitting by ourselves under the silent bright skies, among the peat hags of Drumclog, with a world all silent around us—clearly a good place for Cameronian preaching, and dangerously difficult for Clavers and horse soldiering, if the suffering remnant had a few old muskets among them. We talked," says he, "perhaps more confidentially than ever before. A colloquy, the sum of which is still mournfully beautiful to me though the details are gone. I remember us sitting on the brow of a peat hag, the sun shining, our own voices the one sound. Far, far away to the westward over our brown horizon, towered up, white and visible at the many miles of distance, a high irregular pyramid. 'Ailsa Craig,' we at once guessed, and thought of the seas and oceans over yonder. But we did not long dwell on that,—we seem to have seen no human creature, after French, to have had no bother and no need of human assistance or society, not even of refection, French's breakfast perfectly sufficing us. The talk had grown even friendlier, more interesting. At length the declining sun said plainly, you must part. We sauntered slowly into the Glasgow and Muirkirk highway. Masons were building at a wayside cottage near by, or were packing up on ceasing for the day. We leant our backs to a dry stone fence, and looking into the western radiance continued in talk yet

spire, built after the manner of St. Giles in Edinburgh, is still a marked feature of the place. Riding up to the auld kirk gate, they alight at the "Loupin'-on Stane," where the parish magnates and the well-to-do farmers and their wives had dismounted on Sundays at the ringing of the bell for generations.

The two make their way with careful step through the ponderous flag-stones to the grave of the Hunters, William, no doubt, sighing the while, for the time and making up his mind to labour harder than ever for it, when these huge ton-weight gravestones would no longer be required, to keep the dead in their quiet resting-places. There would then be no more premiums for resurrectionists. In bringing about this happy time our hero certainly bore a noble part.

The great stone discovered, which held securely all that was mortal of his ancestors, bearing the simple record as beneath, now nearly obliterated, gives the names of his father and mother. It also shows that the Laird is called not John Hunter of Calderwood but of Calderfield.

THIS IS THE BURIE
ALL PLACE OF IOHN
HUNTER OF CALDER
FEILD AND AGNES PA
UL HIS SPOUSE
1751

The explanation of this is, that the parish was then divided into townships, hamlets, or clachans; Calderfield being the name of the township, and Calderwood the biggest house in it, the whole came to be recognised by the latter name. After moralising for a bit, they leave the kirkyard, whether they entered the old inn with its dragons wild-looking as their namesakes in the Apocalypse or not, possibly not, as William Hunter's views were advanced as to the propriety of a "meridian." At all events, they get the assistance of the "stane" for mounting, not because they required it, although they might need it more now than ten or twelve years before. However, they must not linger; fair Phaeton, our friend's great rival, is spanking on, and a long and devious road is before them. Following the Glasgow road "for a bittock," Mains Castle comes into view, no doubt a source of attraction; but William Cullen, who has his eyes about him, is attracted by something very different, not a castle in ruins, but a simple farmstead on the brow of a hill; whence, Cullen knew, had issued men and women whose works would yet bless the whole human family. He calls a halt, and asks his friend to observe how prominent a feature in the landscape Long Calderwood, his birthplace, appeared. "Yes," said William Hunter, with that conscious power a few men of genius have possessed, and "if I live I shall make

it more conspicuous," a prediction which has been amply verified. Our horsemen have now made up their minds for a long round, and after going down by Mains they are intent on visiting the minister at Mearns, an old friend of William Hunter's. Mains Castle was a famous spot, once the residence of the Comyns and the Lindsays, and afterwards the property of the Stuarts, and was of ancient date. Hamilton of Wishaw says, "This baronie and paroch was given by King Robert Bruce as ane part of the marriage portion of his daughter Marjorie, to Walter the great Steward of Scotland, and heth been always reckoned since as a part of the Principalitie." The last inhabitants were a useless extravagant lot, who not only brought about their own ruin but that of the place. "Old Dunrod" himself, it is said, seldom went from home unless attended by twelve vassals, mounted on white steeds. He died afterwards in a barn. We fancy we hear the words from William Hunter, when passing the remains of the old keep, "Sic transit gloria mundi." On the riders speed, taking an old road up by Rogerton, Kittochside and down by the Dripps to Waterfoot—a sweet spot—the meeting-place of the waters Earn and Cart, on by Burnhouse and the Mearns Castle, once a stronghold of the Maxwells. The simple spire of the Mearns Kirk is a familiar object in the landscape, adding not a little to its charm, and

telling the friends that they are nearing their destination. Here a halt is made for a time, the inner man refreshed, and the grand doings in London recounted; for doubtless the fame of William Hunter in the sister profession had reached the good man's ears. After this friendly intercourse with the minister, the steeds are brought round and the gentlemen get into their saddles, to accomplish their homeward journey. The course they take, although fully as interesting as that by which they came, can only here be indicated. It is impossible to leave this manse without bringing to mind that it was here "Christopher North" received his early education, under Dr. M'Letchie. So often does he allude to these scenes of his childhood, that the dear parish of "Mearns" is nearly as much associated with that great name, as if it had been the place of his nativity.

Leaving, however, and getting on to the new line, the riders ascend to Kings Well, where, in the old coaching days, passengers from the South, cold and weary, were regaled with potatoes frizzled in butter, "to keep their hearts," as the coachman would say, till they set foot in the city. At this old hostelry the cheery horn of the guard is no more heard, and the railway having passed it by, silence now reigns. After passing Kings Well, they proceed through the green moorland by

North Moorhouse, where was born, in 1798, Robert Pollok, of *The Course of Time*, an epic not much heard of now, but written by an original genius, with frequently a power and enthusiasm most extraordinary in so young a man. Often, when he was far away in search of health—he died of consumption—his heart yearned for his moorland home, with its overshadowing trees—

> "Four trees I pass not by,
> Which o'er our house their evening shadow threw:—
> Three ash and one of elm. Tall trees they were,
> And old; and had been old a century
> Before my day. None living could say ought
> About their youth; but they were goodly trees.
> And oft I wondered, as I sat and thought
> Beneath their summer shade, or in the
> Night of winter heard the spirits of the wind
> Growling among their boughs—how they had grown
> So high in such a rough tempestuous place:
> And when a hapless branch, torn by the blast, fell down,
> I mourned as if a friend had fallen."

Their heads homewards, the horses go cheerily along the moorland road which winds

> "'Mong hills and streams
> And melancholy deserts, where the sun
> Saw as he passed, a shepherd only, here

And there, watching his little flock, or heard
The ploughman talking to his steers."

The riders, true Scotsmen both, know they are now on consecrated ground; the moors here and onwards where they wend their way, figure often in the history of the Covenant; the martyrs' last resting-places are in the kirkyards of the villages all around. On the right is the hill of Ballygeich and near by Lochgoin, the venerable dwelling of the Howies of Lochgoin, that during the persecutions frequently afforded asylum to those, who, for conscience' sake, were obliged to flee from their homes. Twelve times it was plundered, and the inmates forced to take refuge in the barren moors around. On the left is Eaglesham House or Castle, built by Allan Gilmour. The estate of Eaglesham, which was the chief possession of the Scottish family of Montgomery, continued to be their property for the long period of seven hundred years. The romantic Earl had to part with it after the Tournament. Howie and Montgomery reckon in family history as ancient as the family of Hunter itself. The twelfth Earl of Eglinton had a fancy to build a village, which he did not live to complete. He called it after his estate, and it has been said that, had its founder's plan been carried out, Eaglesham would have ranked second to no small town in Scotland. Even as it is, it presents a remarkably

pleasant aspect, with its double row of houses facing each other, whilst midway between flows a rivulet, whose gentle sloping banks are partly green sward, and partly adorned with trees. This village is now becoming popular as a health resort with the Glasgow people. The bracing and pure air is proving a strong attraction to visitors in the summer season. Between the Cart and the rivulet are the ruins of Polnoon Castle, which was built by Sir John Montgomery of Eaglesham with the money received for the ransom of Harry Percy, the celebrated Hotspur, whom he took prisoner with his own hand at the Battle of Otterburn, 1388. Here we will leave our friends to jog leisurely home through a sweetly pastoral country, over Ardoch-rig, by Browncastle, Loudon Hill, and Drumclog, down through Moss-Malloch Moor to the dear old homestead of Long Calderwood,

"Beyond the moors where the curlews wheel."

The pasture here is abundant and of rare quality, producing the richest milk and splendid cheese. A feature of the landscape is the herds of Ayrshire kine, affording patches of beautiful colour, which give tone to the surrounding greenery. It is spring-time, "thou darling of the year," says Burns, addressing this season. The lark is in the sky, the airy minstrel of which the "Ettrick Shepherd" so sweetly sang—

"Bird of the wilderness,
Blithesome and cumberless,
Sweet be thy matin o'er moorland and ea!
Emblem of happiness,
Blest is thy dwelling-place,
Oh to abide in the desert with thee."

The lambs are skipping, the rabbits are out of their burrows, the maukins are frolicking wildly, giving illustration of a certain phase of human life—"as mad as a March hare." The plaintive cry of the peesweep, the whir of the grouse and partridges, and the craw of the black cock, every now and again greet the ear; already they are love-making. These are among the finest moors in Scotland for game. At this season the pulse of nature beats strong with the joy of life, in unison with the hearts of the two men of science, which are full with the ecstasy success so surely yields. If there be any lingering note in the joyous melody, it is the sigh of yon rustic swain crooning wearily within the fragrance of the trysting tree —a sigh so beautifully rendered by Joanna Baillie—

"The gowan glitters on the sward,
The lav'rock's in the sky;
And collie on my plaid keeps ward,
And time is passing by.
Oh, no! sad and slow,
And lengthen'd on the ground,

The shadow of our trysting-bush,
It wears so slowly round!

"I coft yestreen, frae Chapman Tam,
A snood of bonnie blue,
And promised when our trysting cam',
To tie it round her brow.
Oh, no! sad and slow,
The mark it winna pass;
The shadow of that weary thorn
Is tether'd on the grass."

The finest description of this beautiful varied country is given by Professor Wilson, in one of his apostrophes to Mearns. "Art thou beautiful, as of old, oh, wild moorland, sylvan, and pastoral parish? the paradise in which our spirit dwelt, beneath the glorious dawning of life—can it be, beloved world of boyhood, that thou art indeed beautiful as of old? Though round and round thy boundaries in half an hour could fly the flapping dove—though the martins, wheeling to and fro around that wild and wall-flowered ruin of a castle, central in its own domain, seem in their more distant flight to glance their crescent wings over a vale rejoicing apart in another kirk spire; yet, how rich in streams, and rivulets, and rills, each with its own peculiar murmur, art thou, with thy bleak exposure, sloping upwards in ever lustrous undulations to the portals of the

east! How endless the interchange of woods and meadows, glens, dells, and broomy nooks, without number among thy banks and braes!" And then of human dwellings—"How rises the smoke, ever and anon into the sky, all neighbouring on each other, so that the cock crow is heard from homestead to homestead; while, as you wander onwards, each roof still rises unexpectedly, and as solitary as if it had been far remote, fairest of Scotland's thousand parishes, neither Highland nor Lowland, but undulating—let us again use the descriptive word—like the sea in sunset after a day of storms. Yes, Heaven's blessing be upon thee! thou art indeed beautiful as of old."

Let us now for a moment glance at the scientific character of the companion with whom Dr. Hunter spent this delightful holiday. It has often been remarked that persons of dissimilar character, who have similar aims, live together more amicably than persons of nearly the same character: and this is well illustrated in the lifelong friendship of the "two Williams,"—William Cullen and William Hunter. At first, and only for a short time, conjoined in practice at Hamilton, they were ever afterwards attached friends, and many letters of Cullen to his "dear Willie," as he affectionately calls Hunter, have been published in Thomson's life of the great physician. He is another Scotchman of the medical profession of whom

our country has just reason to be proud—one of Buckle's "splendid catalogue of the great Scotchmen of the eighteenth century." He did much for the medical school of our University, at which he took the degree of M.D. in 1740. On coming to Glasgow from Hamilton, he began to lecture in connection with the University, the medical school of which was as yet very imperfectly organised. His aim was to establish a medical school similar to that which had been founded in Edinburgh. Dr. Cullen for some years lectured on the theory and practice of physic, materia medica, botany, and chemistry. Chemistry was the subject which at this time seems to have engaged the greatest share of his attention: in fact the foundation of Philosophical Chemistry was laid in Britain by him. His chemical prelections in the College of Glasgow first conferred something like the dignity of a science upon chemistry; and it was his lectures that first incited his pupil Black to that course of research which ended in the establishment of the great doctrines of latent heat, and those discoveries respecting lime and magnesia, which conducted to the true theory of gases. In this relationship it is interesting to note that the evolution of these principles assisted Watt materially in the application of steam. Watt and Black were fast friends. In this very year in which William Hunter visited Glasgow, Cullen became regularly attached to the

University as regius professor of physic. In 1756 he accepted an invitation to the chair of chemistry vacant in Edinburgh, where his career was even more distinguished. Strange to say, Dr. Black was appointed to the chair of chemistry in Glasgow, vacant by the resignation of his preceptor. Dr. Black removed from Glasgow to Edinburgh, where he again succeeded Cullen as professor of chemistry.

Cullen's fame, however, rests on his great power and influence as a teacher, and on his important contributions to theoretical and practical medicine. Indeed, he may justly be regarded as the founder of scientific medicine, as William Hunter was the founder of scientific midwifery, and John Hunter of scientific surgery. Cullen as a lecturer, like William Hunter, appears to have stood unrivalled in his day. He was the first to make a change in the established mode of instruction, by laying aside the use of the Latin language in the composition and delivery of his lectures. The grasp and vigour of his mind were shown in the facility with which he mastered the many different branches of medical knowledge which he taught. Those two men are admirable illustrations of the two widely separated intellectual classes of great medical teachers. To the one class belong Hippocrates and Galen, Sydenham and Cullen; they may be

called the philosophers, those who exaggerate the powers of mere reason, and they flourish still. The other class has a history beginning in Northern Italy, at the revival of learning. "It was at this happy time," says William Hunter, "that Malpighi came forth, the great period for the study of all natural things. At this time, the Academy del Cimento arose in Italy, the Royal Society in London, and the Royal Academy in Paris. And from that time the important doctrine of rejecting all hypotheses, or general knowledge, till a sufficient number of facts shall have been ascertained by careful observation and judicious experiments, has been every day growing into more credit. That doctrine was the source of Sir Isaac Newton's, and of all the experiments, which have been made since the middle of the 17th century." This is the doctrine of the second great intellectual class of physicians, and to it belong Harvey, Morgagni, William Hunter, John Hunter, Laennec, and Charles Bell; those who give mere reason its due subsidiary place, yet full scope.

Cullen was of the philosophical school. His name is perhaps the greatest belonging to it in recent times; and a great philosopher, Sir William Hamilton, favourably reviewing his work, points out that he probably did not add a single new fact to medical science. William Hunter was of the scientific, not of the philosophical class. "Cullen's

contributions to medicine, says Matthews Duncan, valuable though they are, could be dispensed with; the progress of medicine would be little disturbed by their loss. It is quite otherwise with William Hunter's; without his contributions, as without Harvey's, progress would be impossible. The honoured graves of Hippocrates and Cullen, and their truly valuable works, could be lost even to memory without very grievous results. The works of Harvey and William Hunter are indispensably necessary for progress. They cannot be forgotten, far less lost; medical practice must wait till they are produced, before it can make a real step in advance. Ingenious medical theories are extremely useful, but they do little for the advancement of medicine: often they retard it. The search for specifics or cures and such pseudo-philosophical pursuits, has been continued for a thousand years, and as yet not one specific has been discovered."

On William Hunter's return to London after his holiday in Scotland he went to reside in Jermyn Street, and settled there as a physician. His prosperity was rapid and great: fortune smiled on him more kindly than ever. A kind Destiny seemed to pave the way for his success; one by one several of the most eminent practitioners of the day were removed by death or otherwise. Sir Richard Manningham died and Dr. Sandys retired. From the latter

gentleman Dr. Hunter acquired a valuable collection of anatomical preparations, which is still to be seen in the Hunterian Museum. Dr. Sandys was the first to have rendered the injected specimens pellucid by the aid of spirits of turpentine.

Dr. Hunter now became the leading practitioner of midwifery in London. He knew more of nature and her powers, and reverenced and trusted her more, than his contemporaries. Shortly before this he began to make studies for his great work on obstetrical anatomy, which it took him thirty years to complete. It is this work that keeps his name constantly before the profession as the founder of the science of obstetrics. It must surely have been in Smellie's house that William Hunter received the bias to midwifery practice that he now showed. Smellie and the two Douglases were able men, but Hunter far exceeded them as an original observer, a shrewd investigator, and a clear, lucid writer. He became a Member of the Royal College of Physicians, London, in 1756. He had to pay a fine of £20 to the Corporation of Surgeons for joining the Physicians; there is no proof that this fine, though legally due, was exacted. Honours year after year multiplied upon him, these being crowned by his being consulted by Charlotte, Queen of the reigning monarch, George III.

In courts, where favour too often prevails over merit, appointments of this sort are not always conferred on persons of the greatest abilities, but it is certain that Dr. Hunter owed his nomination to this important office solely to his own well-earned reputation, and his assiduity and uniform success in the discharge of it showed how well he deserved it.

On the 12th of August, 1762, he writes to Cullen to announce the birth of the Duke of Cornwall: "I owe it to you, and thank you from my heart, for the great honour I now have, and have had for some time, though very few knew anything about it—I mean, having the sole direction of her Majesty's health as a child-bearing lady." In 1764 he was appointed Physician Extraordinary to her Majesty. Success did not dwarf him, nor diminish his work. He now engaged Mr. Hewson, as assistant lecturer and demonstrator, as successor to his brother John, who joined the army. Hewson was an extremely able man, and was, without doubt, of great service to Hunter. Amid all his labours, Dr. Hunter found time to prepare and send to the press, in 1762, the first part of his Medical Commentaries, purposing that the second part should consist of his treatise on the human gravid uterus. In these Commentaries is exhibited Hunter's one weakness—an inordinate love of controversy. His impatience of contradiction he

averred to be a characteristic of anatomists, in whom he once jocularly condoned it, on the plea, that the passive submission of dead bodies rendered the crossing of their wills less bearable! With, therefore, the combativeness which was part of his nature, perhaps of his strength, we find him summarising and reprinting his controversy with the Monros and Pott, his old and able antagonists in the profession—asserting his claims against the former as to the method of injecting the testis with mercury, against the latter, and in defence of his brother John, as to which of them had first elucidated the nature of hernia congenita. In the year 1767 Dr. Hunter became a Fellow of the Royal Society, to which he communicated his observations on bones commonly supposed to be those of the elephant, which had been found near the river Ohio in America.

This paper shows Hunter's zeal for natural history and the accuracy of his observations. The French Academicians and men of science elsewhere came to the conclusion that in all probability they were bones of elephants. From the different character of the jaw bone, the teeth, and other anatomical signs, Dr. William Hunter came to a different conclusion, namely that they did not belong to the elephant, but to an animal extinct. Hunter was correct. The bones were those of the mastodon of Cuvier.

Thus, amid the anxious duties of that arduous branch of the profession in which he excelled, we find his active mind leading him into investigations on subjects of natural history. These are eminently interesting to us all, and afford matter of fascinating study. The celebrated specimens in natural history which were collected by the famous Captain Cook were acquired by Dr. Hunter, and now adorn the Hunterian Museum at Gilmorehill.

His position was now perfectly assured, the aristocracy were at his feet, and the King was his friend,—and no mean friend the King proved. There was much to admire in the personal character of George III. His intellectual powers have been too much underrated. The man who could not only sustain a prolonged conversation with such men as Fox and Johnson, but could create a favourable impression on their minds of his mental resources and information, could not be a weak man. Solomon says of the wise man, "For the grace of his lips the king shall be his friend," and this was literally true of William Hunter. Dr. Hunter was one of those few fortunate men who are placed early in life exactly in the situation for which nature and education design them. He had an innate love of order, which evinced itself in every part of his conduct through life, a solid understanding, a correct eye, with a perseverance which could only have been supported by a

fondness for his occupation, his happy manner of conducting it, and the success with which it was attended. His classical acquirements were superior to those of most men who are not professed scholars. These, with his natural endowments, gave him a facility of expression, and a most happy choice of words, which, joined to a talent at demonstration, could not well be surpassed. Whether from an originally correct ear, a refined taste, or the early company he fell into, we are told his dialect had all the polish of the Southern Metropolis, with enough of the northern recitative to preserve the close of his sentences from too abrupt a cadence. His person, though small, was graceful, his cast of features was regular and interesting, his voice musical, and his manner attentive and flattering. He had all the qualifications which would naturally place him in the front rank of practitioners of the healing art. In short, Dr. Hunter was a polite scholar, an accomplished gentleman, a complete anatomist, and probably the most perfect demonstrator, as well as lecturer, the world has ever seen.

In 1768 he was elected Fellow of the Society of Antiquaries. In the same year he was appointed by the King, Professor of Anatomy to the Royal Academy of Painting and Sculpture instituted in that year. There is a picture of him by Zoffany in the possession of Mr.

Hunter-Baillie, in which he is represented delivering a lecture on the muscles, surrounded by a group of academicians. Hunter's portrait is the only part of the picture that is finished. This royal appointment was very flattering to Dr. Hunter, and he discharged his duties with great zeal and enthusiasm. He pointed out the application of anatomical knowledge, the adaptation of the expression of anatomy to painting and sculpture, and had abundant opportunities for evincing his refinement of taste and appreciation of whatever is beautiful in nature or art. His observations are said to have been characterised by much originality and just critical acumen. It was his delight to lecture, and no doubt it afforded him infinite pleasure to enlighten the academicians in the mystery of expression. "A just feeling," says Sir Charles Bell, "in the fine arts, is an elegant acquirement, and capable of cultivation. Drawing is necessary to many pursuits and useful arts; Locke has included it amongst the accomplishments becoming a gentleman, and we may add, it is much more useful to the artisan. Good taste and execution in design are necessary to manufacturers, and consequently they contribute to the resources of a country. Anatomy, in its relation to the arts of design, is, in truth, the grammar of that language in which they address us. The expressions, attitudes, and movements of the human figure are

the characters of this language, adapted to convey the effect of historical narration, as well as to show the working of human passions, and to give the most striking and lively indications of intellectual power and energy."

To William Hunter's great success in practice, and especially as an accoucheur, there is only slight occasion to allude, for no amount of lucrative practice, no consideration of the exalted station of patients, can establish for their fortunate and rich possessors one tittle of posthumous glory. Contemporary fame and fortune come to many a worthy and to many an unworthy man. William Hunter deserves admiration, but not as a successful practitioner, in the vulgar sense of the term. The kind of prosperity in practice he coveted is well given in a passage from one of his introductory lectures, when directing the attention of students to the close of their lives. He says :—"I am certain the most diligent, the most conscientious, and the most humane among you all, will most ardently wish that you could have done still more service to the cause of your poor distressed fellow creatures."

He regarded the advance of science as the best means of promoting the healing art, and his life was devoted to this, as its whole history, and the destination of his great fortune abundantly demonstrates. He repeatedly speaks of curtailing his practice to allow him to spend

more time at higher work. "For the future," he says, in another place, "money can be of no use to me but for acquiring and communicating science, which shall be my object as far and as long as I can pursue it. A man may do infinitely more good to the public by teaching his art than by practising it. The good effects of the latter must centre in the advantage of the few individuals that may be under his care as patients; but the influence of a teacher extends over the whole nation, and descends to posterity."

No man could have been more fortunate than Dr. Hunter in the selection of his assistants; and the work they helped him to accomplish speaks volumes for the instruction he gave them and the influence he had on them. His assistants were, first, his brother John Hunter, who left him to join the army in 1761; second, Mr. Hewson, who succeeded John; and third, Mr. Cruikshanks, who took the place of Mr. Hewson, who resigned in 1770. They each in turn acted as his demonstrator in anatomy, and assisted him in his lectures. During any spare time, they wrought, as he did himself, in his museum. He commenced making anatomical preparations, whilst living with Dr. Douglas, to illustrate his lectures, subsequently delivered in Covent Garden. By his selection of the practice of midwifery, his attention was more particularly directed to anatomical

obstetrics. His researches, extending over well-nigh thirty years, he was about to embody in a great work on the subject.

Dr. Hunter's great object was to establish an anatomical school in the Metropolis, upon a most extensive scale; and to promote this, he addressed a memorial to the Earl of Bute, the First Lord of the Treasury. In this paper he set forth the advantages to mankind arising from a knowledge of anatomy, which he described as the only solid foundation of medicine, being to the physician and surgeon what geometry is to the astronomer. The difficulty of procuring bodies for dissection in his day rendered the formation of a great national school a desirable object. Had he succeeded in this project, as might have been expected, the country would have been saved those miserable scenes enacted afterwards in Edinburgh and elsewhere, which involved the ruin of poor Knox, the anatomist—a true philosopher. Knox deserved a better fate. Even in London no regular courses of anatomy were given prior to 1746; surgery and physiology, therefore, made but slow advance. What Dr. Hunter asked, was to have a grant of a piece of ground upon which he might erect an edifice fit for all the purposes of anatomical study. His request was refused. He asserted that without some public and permanent foundation, he foresaw that anatomy, and every-

thing that depends upon it, must sink again to its former state. How true this was! His application to Government having been altogether slighted, he, after many months, abandoned the scheme, and built himself a house, with lecture and dissecting rooms, in Great Windmill Street, whither he removed in 1770. His Anatomical Theatre, founded here at this time, was the great school for three-quarters of a century, for the education of anatomical teachers. In connection with all this the following significant letter to Dr. Cullen will be read with interest :—

"*2nd April*, 1765.

"DEAR SIR,—

"I have felt disappointment myself; and therefore can easily imagine what you must feel in meeting with such opposition to a scheme which I know to be of so much more consequence to the public than it can be to yourself. Mine was to have founded a perpetual school for Anatomy here. I will one day or other send you a copy of my Memorial to the Ministry. In short, without asking any thing for myself, but, upon the contrary, declaring I would have nothing, I only asked a piece of ground to build upon, and offered to lay out £7000 immediately on a building, with every convenience for anatomy, and obliging myself to give it to the public the moment it was built: and said, further, that I *meant*, but would not now oblige myself, to give likewise my preparations and books. My library has already cost me I presume between £3000 and £4000; and my anatomical museum is of more worth to the public, because they are things.

that cannot be bought. I am resolved never to be much richer than I now am. I am independent, and wish to do something that shall be mentioned when the few years which I have to live are gone. Now, you shall see to what purpose all this—I should like to be joined with you in the end of life as in the beginning. You have been ill-used at Edinburgh, as I have been at London. Could you make a sacrifice of the few more guineas you would receive by practice at Edinburgh, and join with me to raise a School of Physic upon a noble plan at Glasgow? I would propose to give all my Museum and Library, and build a Theatre at my own expense: and I should ask nothing for teaching but the credit of doing it with reputation. You and Black and I, with those we could chuse, I think could not fail of making our neighbours stare. We should at once draw all the English, and, I presume, most of the Scotch, students. Among other reasons, I should not dislike teaching anatomy near my two friends, the Monros, to whom I owe so much.

"I will say no more at present upon this subject. I mean only to throw it out to you for your consideration, and shall be glad to have your thoughts in general upon the plan. I would not have you say any thing of it to any person, except in confidence to any sensible friend whose opinion you may choose to take. I shall explain myself further whenever you please. Let me now only say, before I put my name to this, neither of us have been well used; and it is in our power to do ourselves immortal honour. I am, as you well know, dear Sir, always your most obliged

"William Hunter."

Dr. Hunter at the head of his profession, honoured by the esteem of his sovereign, says Dr. Simmonds, and in the possession of everything that his reputation

and wealth could confer, seemed now to have attained to the summit of his wishes. But these sources of gratification were embittered by a disposition to the gout, which harassed him frequently during the latter part of his life, notwithstanding his very abstemious manner of living. He was extremely simple and frugal, and the quantity of his food was small, as the quality was plain. He was an early riser, a man of untiring industry, and every spare moment was spent at his anatomical pursuits or in his museum. When he invited his younger friends to his table, they were seldom regaled with more than two dishes and one glass of wine; when alone, he rarely sat down to more than one dish. He would say that a man who cannot dine on this deserves no dinner. It has been said that he was restrained by mere parsimony from indulging in the luxuries and amusements which captivate the generality of people. But he seems to have had no relish for them. It may, however, with truth be asserted, that he never suffered his economy to interfere in matters where the dignity of his character, or the interests of science, were concerned. About ten years before his death, his health was so much impaired, that he might soon become unfit for the fatigues of his profession; he began to think of retiring to Scotland and exchanging the *fumum et opes strepitumque Romæ*

for the fresh air and quiet of a residence in the country. He gave orders for the purchase of an estate, but the title-deeds proving insufficient, the bargain was not completed. He resolved, therefore, to remain in practice, more especially as the expenses of the museum were increasing greatly by reason of constant additions. At Great Windmill Street, in what was called for long the Hunterian school, he continued to teach. It was his delight to lecture; he did his work *con amore*, and his students were *en rapport* with him. Two introductory lectures corrected by himself for the press, but not published till after his death, furnish us with some idea of his power as a lecturer. They give an admirably condensed history of anatomical science considered in relation to general science and the arts, and detail his own plan of lectures and instruction. From this place issued his marvellous work, *The Anatomy of the Human Gravid Uterus.* There was, perhaps, never a book published by any physician, on which longer and severer labour was bestowed.

He contributed to the *Transactions of the Royal Society*, and to the *Medical Observations and Inquiries*, at least twenty papers, many of which have a distinct place in the advance of medicine, and every moment he could spare from his other arduous duties was spent at his anatomical pursuits or in his museum.

In January, 1781, he was unanimously elected President of the Royal College of Physicians of London, as successor to the honoured Dr. Fothergill, the interests of which institution he very zealously promoted. Not only was he "loved at home," he was "revered abroad." In 1780 the Royal Medical Society of Paris voted him one of their foreign associates: and in 1782 he received a similar mark of distinction from the Royal Academy of Sciences in that city.

Thus, in tracing the life of this eminent physician, we find honour upon honour showered upon him, in acknowledgment of the most essential services he had rendered to the cause of science. But all men are mortal. It has been seen most surely that Dr. Hunter devoted himself to teaching with all his powers, stimulated by all his heart. As was most fitting, in the midst of the work he loved so well, at an introductory lecture on Operative Surgery, Thursday, 15th of March, 1783, the summons came. Towards the conclusion of the lecture his strength was so exhausted that he fell into a swoon. He was carried from the theatre; for him the drama of life was nearly over. Next morning he told his physician, Dr. Charles Coombe—his brother John was also in attendance—that he certainly had a paralytic stroke during the night. As neither his speech nor his pulse was affected, and he was able to raise himself in

bed, Dr. Coombe encouraged him to hope that he was mistaken; but the event proved the Doctor's idea of his complaint to be but too well founded. He died on the 30th of March, 1783. William Hunter died as he lived,—master of himself:—

> "Like one that wraps the drapery of his couch
> About him, and lies down to pleasant dreams."

His calm resignation at the last is recorded. Turning to his friend Dr. Coombe, he said, "If I had strength enough left to hold a pen, I would write how pleasant and easy a thing it is to die." This saying is given in a book containing the "last words of dying men." His brother was asked as to the truth of it, John merely remarked, "that it was a poor thing when it came to that." Nevertheless, let us not forget the words of the great dramatist who makes old Gaunt say:—

> "Oh, but they say the tongues of dying men
> Enforce attention like deep harmony;
> Where words are scarce, they are seldom spent in vain,
> For they breathe truth that breathe their words in pain.
> He that no more may say is listen'd more
> Than they whom youth and ease have taught to gloze;
> More are men's ends marked than their lives before—
> The setting sun and music at the close,
> As the last taste of sweets is sweetest last—
> Writ in remembrance more than things long past."

William Hunter was buried on the 6th of April, in the Rector's Vault of St. James', Piccadilly, where his remains still repose.

Here lies the first of our heroes amid his compeers. A simple marble slab bears the record—

SACRED
TO THE MEMORY OF
WILLIAM HUNTER, M.D., F.R.S.,
CELEBRATED AS A PHYSICIAN AND PHYSIOLOGIST.
Born at Kilbride in Lanarkshire, May 23rd, 1718.
Died in London, March 30th, 1783.

This is placed between the memorials—equally simple—of two of the most distinguished men who ever adorned the medical profession—Thomas Sydenham and Richard Bright. Thus all that was mortal of our eldest brother, William Hunter, found a fitting resting place.

St. James' Church, Piccadilly, is well worth a visit. Very many illustrious persons are buried there. The exterior is poor, but the interior is admirable in many respects. The construction of the roof causes it to be considered as one of Sir Christopher Wren's greatest successes. The marble font is an admirable work of Grinling Gibbons the English Cellini. The stem represents the Tree of Knowledge, round which the serpent twines as it offers

the apple to Eve, who stands with Adam beneath. The organ was ordered by James II. for his Catholic chapel at Whitehall, and was given to this church by his daughter Mary. The wood carving of the altar screen is exquisite, and was greatly admired by Evelyn, as he records in his Diary—"Dec. 10th, 1684:—I went to see the new church at St. James', elegantly built. The altar was especially adorned, the white marble inclosure curiously and richly carved, the flowers and garlands about the walls by Mr. Gibbons, in wood; a pelican with her young at her breast is one of the artist's finest productions. There was no altar anywhere in England, nor has there been any abroad, more richly adorned."

CHAPTER IV.

WILLIAM HUNTER—HIS ACHIEVEMENTS.

ALTHOUGH Dr. Hunter did not engage in the ministry, he no doubt owed much to the education which was necessary to qualify for entering the sacred precincts of the church. To the College of Glasgow, and to the friends he made while studying there, he was in the first place indebted for his fame. When he gave up his idea of studying for the Church—he could not subscribe to the dogmatical articles of faith—he embraced the medical profession, and devoted himself heart and soul to it. He was not the first good man who has been driven to physic by the same cause, for which Physic may thank the Church. From the time William Hunter left Dr. Cullen to study in Edinburgh with Dr. Monro, senior—under whom no doubt he first imbibed his love for anatomy, he made up his mind to devote himself to this most attractive science. When, however, next year he went to London, he was greatly

impressed by the defective state in which he found medical education. His was the great mind which saw what was most wanted in medicine, what was demanded, what the time was ready to produce if properly urged by a fitting genius. "Anatomy is," he says, "the only solid foundation of medicine; it is to the physician and surgeon what geometry is to the astronomer. It discovers and ascertains truth, overturns superstition and vulgar error, and checks the enthusiasm of theorists and sects in medicine, to whom perhaps more of the human species have fallen a sacrifice than to the sword itself or to pestilence." Speaking later in life of the improvement of anatomical teaching in London, he said it was owing to one, meaning himself, who, with very moderate abilities, happened to have an uncommon love for the study, and who therefore took uncommom pains both to inform himself and to inform others. Hence it is that London has been for some years one of the best schools for anatomy; and hence the London teacher is become possessed of a collection both of preparations and of books inferior, perhaps, to none in Europe. He wishes to teach anatomy to the best advantage of his pupils while he enjoys life and health, and to perpetuate the spirit for anatomy in this country as far as human institutions can receive perpetuity. At the time of Hunter

there was a terrible incubus resting on the science of anatomy, the incubus of morbid human feeling. "Who will roll us away the stone," said the women at the sepulchre, and when they looked the stone was rolled away. There was no such blessed interference here—science must do her own work. Nothing told but hard fighting. Labour unremitting and severe was required for the task of placing the science of anatomy on a solid basis. Vesalius died for it, Albinus wrought fifty years at it, many more died on the battle-field. The brothers Hunter had hard work for forty years, and it took forty years more and a series of the vilest tragedies which ever disgraced humanity, before the object was accomplished. The Anatomy Act was passed at length in 1832. There is no doubt that the polish of William Hunter and the indefatigable industry shown to mankind in his museum, went a long way to bring about this happy result. Had the government accepted Dr. Hunter's proposal to found such a school and to endow a chair of anatomy in perpetuity, all at his own expense—the material for dissection must have been provided, and the desired result attained. The difficulty of procuring bodies for dissection rendered the formation of a great national school a most desirable object. "Dr. Hunter," says Pettigrew, "is to be looked upon as the founder of the anatomical schools of

this country upon a rational and extended plan. He enriched the science to which he was ardently attached with useful and splendid works, and he contributed by his animation and zeal to infuse into his pupils a love of anatomy and a desire to further the advance of medical science. His museum will long remain a noble monument of his industry and talents, and does honour to the land which gave him birth."

The scientific progress in anatomy and physiology directly effected by William Hunter was very considerable. His discoveries regarding the lymphatic system, its distribution and uses, he believed to be the greatest both in physiology and pathology that anatomy has suggested. Since the days of Aristotle, he says, there have been only two great discoveries in the physiology of our bodies, to wit, the circulation of the blood and the absorbent system. This great work he completed with the assistance of his brother John, of Hewson, and of Cruikshanks.

But not only was William Hunter a most thorough and original anatomist, he was the most scientific man that ever practised as an accoucheur; and midwifery is as much indebted to him as surgery is to his brother. Each not only improved the practice of his profession, but conferred a far greater benefit by introducing the

scientific principles of physiology into what had before their time been little more than mechanical arts. In 1778 he put forth a work by which alone his name would have descended to posterity, and the execution of which reflects the highest credit on his genius. It is almost impossible to estimate in the present day the influence of this work. William Harvey spent eight years in investigating the phenomena of the circulation, William Hunter spent thirty years in investigating the facts connected with the uterus during pregnancy. This book is the first step in the elucidation of the mechanism of parturition, and here again we have William Hunter's love of anatomy bearing marvellous fruits. As Richardson says, "We read the work now with all the pleasure arising from the knowledge that the delineations are drawn from the pure nature." *The Anatomy of the Human Gravid Uterus* is one of the most splendid and valuable works ever issued from the British press. It is not too much to say that its engravings have never been surpassed. It was printed by Baskerville at the Birmingham Press, and some years ago re-issued by the Sydenham Society. Many of the dissections were by his own hand, assisted by his brother John. The work, in large folio, was printed in parallel columns, Latin and English, and dedicated to the King. Opportunities of dissecting the human gravid uterus were

of rare occurrence, and it is fortunate that these opportunities should have fallen into such able hands. The whole power of William Hunter's mind seems to have been bent on producing this great work on anatomical midwifery, with a determination to exclude, as far as possible, any imperfection whatever. This, with the paucity of such cases presenting themselves for dissection, accounts for the delay in the production of this noble work. A period of thirty years was necessary to enable Hunter to obtain instances sufficient to develop all the changes occurring in the human uterus in the process of gestation. The work consists of plates and the explanation of them. The latter portion of the work was published in a separate volume after the death of Dr. Hunter, by his nephew, Dr. Baillie. From these plates drawings, engravings, models, and casts have been made, since used by every lecturer on midwifery. They preserve their purpose to this day in as high a degree as when they were executed. The best artists in Europe were employed, some of the greatest masters of the burin were engaged upon the work; even Sir Robert Strange himself, perhaps the grandest engraver of flesh who ever lived, gave immortality to some of the plates, hence the value and beauty of the inimitable productions. Dr. Matthews Duncan, who was well able to judge of Dr.

Hunter's work, says this work is indeed as yet an unrivalled performance.

Dr. Hunter gave his attention to all departments in order to secure perfection in this book, from dissecting to drawing, engraving, printing, and paper. In this work we have also the record of the discovery of retroversion of the uterus, and the account of the existence of the *membrana decidua reflexa*. His brother, the famous John Hunter, described this membrane as an inflammatory product. William held, however, a different opinion, and seems even at that time to have understood the true nature and origin of the decidua. Dr. Priestley, in his able lectures on "The Gravid Uterus," gives him credit not only for discovering this membrane, but also of indicating its true source. And Dr. Priestley goes on to say, while speaking of William Hunter, "I cannot refrain from pausing for a moment to pay a just tribute to his genius and sagacity. It is the fashion among scientific men in our own days to extol the name of John Hunter as one of the greatest of his time, and well his name deserves all the eulogiums which can be bestowed upon it; but in looking carefully into the labours of his brother William, one is often tempted to think that, although his pursuits may not have been so varied and extensive as those of his more celebrated brother, yet, for profundity of observation and true saga-

city, he was in no respect his inferior. William Hunter's opinion was that the decidua really consists of the hypertrophied mucous membrane or inner lamella of the uterus. In an account of it, written about the time he published his magnificent plates of the 'Gravid Uterus,' he repeats this opinion on more than one occasion. It is the more important to be clear upon this point, as we shall see presently that very important and comparatively recent researches prove William Hunter's account to have been the correct one." Dr. Hunter's industry and zeal in the advancing of science and his profession were truly extraordinary. He described aneurismal tumour more carefully than any previous author, and pointed out the nature of aneurismal varix. He explained with much care and precision the structure of cellular tissue. William Hunter at the same time gave a clear and ingenious statement of the difference between cellular membrane and adipose tissue, in which he maintained the general distribution of the former, and represented it as forming the serous membranes, and regulating their physiological and pathological properties—doctrines which were afterwards confirmed by his brother, John Hunter. He had written an account of ovarian dropsy, and many questions relating to it—whether or not it should be treated by incision and suppuration, or by

complete excision. He virtually discovered the disease known as retroversion of the uterus. He introduced bristles into the ducts of the lachrymal gland. He made out, and taught publicly, the origin and uses of the lymphatic vessels ; he injected the tubuli testis with mercury, supported the theory of Haller as to the insensibility of tendons ; and, aided by his brother John, he made experiments relating to the absorption of veins. He left materials for an important work, a history of the various concretions found in the human body, treating of the causes and classification of urinary calculi, with engravings. A most interesting paper was read to the members of the Society of Physicians after his decease on "The Uncertainty of the Signs of Murder in the Case of Bastard Children." The reader, says Richardson, is fascinated with this paper and its admirable reflections. It shows at once not only the science, but the philanthropy of its author. He pleads for the wretched women who are accused of crime with all the eloquence of a powerful writer, and the caution of a philosopher. He gives to medical witnesses sound advice which might still be read with advantage ; and, entering into the merits of the hydrostatic test, as applied to criminal cases, he describes its value and its fallaciousness with an acuteness which has not been surpassed. If we may venture from this specimen to form our judgment

as to his other lectures, their tendency must have been to improve his pupils with respect to their moral qualities fully as much as in relation to their professional attainments. The two introductory lectures published after his death are full of words of wisdom.

With one or two short quotations, this chapter will appropriately close. Anatomists have been known to have lectured all their lives to their students without making the slightest reference to design, or a Great First Cause. This was not the case with William Hunter. After referring to Galen, Cicero, and others of the mighty dead, he says, "It would be endless to quote the animated passages of this sort which are to be found in the physicians, philosophers, and theologists who have considered the structure and functions of animals with a view to the Creator. It is a view which strikes me with a most awful conviction, and when I speak of it I feel that I must speak from my senses and observation. Who can know and consider the thousand evident proofs of the astonishing art of the Creator in forming and restraining an animal body such as ours without feeling the most pleasing enthusiasm? Can we seriously reflect on this awful subject without being almost lost in admiration, without longing for another life after this, in which we may be gratified with the highest enjoyment of which our faculties and nature seem capable; the seeing and comprehending

the whole plan of the Creator in forming the universe, and in directing all its operations? The man who is really an anatomist, yet does not see and feel what I have endeavoured to express in words, whatever he may be in other respects, must certainly labour under a dead palsy in one part of his mind. Milton could look on the sun at noon without seeing light. There was no apparent defect in his eye, but the nerves of that part were insensible. Let us then, in our imagination, make a man: in other words, let us suppose that the mind, or immaterial part, is to be placed in a corporeal fabric, to hold a correspondence with other material beings by the intervention of the body; and then consider, *a priori*, what will be wanted for her accommodation. In this enquiry, we shall plainly see the necessity, or advantage, and therefore the final cause, of most of the parts which we actually find in the human body. And if we consider that, in order to answer some of the requisites, human wit would be very insufficient, we need not be surprised if we meet with some parts of the body whose use we cannot yet make out, and with some operations or functions which we cannot explain. We can see and comprehend that the whole bears the strongest character of exceeding wisdom and ingenuity; but the imperfect senses and capacity of man cannot pretend to reach every part of a machine, which nothing

less than the intelligence of the Supreme Being could contrive and execute."

Again, "The comparison of a physician to a general is both rational and instructive. The human body under a disease is the country which labours under a civil war or an invasion; the physician is, or should be, the dictator and general who is to take the command, and to direct all the operations. To do this duty with full advantage, a general, besides other acquirements useful in his profession, must make himself master of the anatomy and physiology, as we may call it, of the country. He may be said to be master of the anatomy of the country when he knows the figure, dimensions, situation, and connection of all the principal constituent parts, such as the lakes, rivers, marshes, mountains, plains, woods, roads, passes, fords, towns, fortifications, etc. By the physiology of the country, which he ought likewise to understand, is meant all the variety of active influence, which is produced by the inhabitants. If the general be well instructed in all these points, he will find a hundred occasions of drawing advantages from them; and without such knowledge, he will be forever exposed to some fatal blunder. The famed retreat of the ten thousand Greeks from Persia would have been easily effected if their leaders had known the country through which they were to pass; their dangers,

disappointments, and distresses arose principally from their ignorance of that part of the globe."

"Of the spirit of William Hunter," says Matthews Duncan, "I shall give you illustrations from his own words, and if you read them in the light of the progress of medicine since his day, you will observe how true he was, not only as an apostle of scientific progress, but also as a prophet. 'Were I to guess,' says he, 'at the most probable future improvements in physic, I should say that they would arise from a more general and more accurate examination of diseases after death; and were I to place a man of proper talents in the most direct road for becoming truly great in his profession, I would choose a good practical anatomist and put him into a large hospital to attend the sick, and dissect the dead.'" When we take into consideration the great progress in anatomy and physiology which we owe directly or indirectly to William Hunter, through the instruction of assistants and students, the direction of their labours, and the communication to them of his own enlightened enthusiasm, it is simply wonderful what has been accomplished. William Hunter is generally known in the profession as a great obstetrician. This he no doubt was,—certainly one of the very greatest that has ever flourished in this country or any other. His enthusiasm as an anatomist knew no

bounds. Anatomy was the passion of his life and it was strong in death, for his mind still reverted in his last moments to what had been to him an uninterrupted joy,—the disclosing of the marvellous mechanism of the human frame.

CHAPTER V.

THE HUNTERIAN MUSEUM.

It yet remains to record the history of, and the circumstances under which Dr. Hunter founded his museum, a labour of love which certainly constituted an integral part of his life's work, forming perhaps his greatest achievement. The great object he had in view was ever present to his mind,—to establish a museum in London for the improvement of medicine, surgery, and physic. To promote this, as has been seen, he addressed a memorial to the then Prime Minister, Lord Bute, and made a personal solicitation for the grant of a piece of ground in the Mews, upon which he might expend £6000 or £7000 in erecting a building for the purposes of his museum as well as for anatomical study, and also submitted a plan in support and explanation of his offer. But the Imperial Exchequer was at the time considerably depleted. One is inclined to think that it is rarely otherwise, even in good

Stark delineavit

Annan. fecit

The Hunterian Museum, Old College, Glasgow

times, more especially when application is made to whoever the powers at the time may be, in reference to aid for promoting purposes of science or art. Hunter undertook to spend £7000 on the building, and to endow a Professorship of Anatomy in perpetuity. But the scheme was scurvily treated, and fell to the ground. True, a public subscription was proposed, which Lord Shelbourne, then in high office headed with one thousand guineas. This handsome donation Dr. Hunter in quite characteristic fashion declined. The intrepid doctor was thus left to his own resources. The old Scotsman was, however, not to be baulked. He was equal to the occasion, and forthwith secured a site in Windmill Street, on which he erected a spacious edifice, containing, besides an amphitheatre and other necessary apartments, ample accommodation for his museum, the whole costing over £8000. Chevalier in his oration has some prophetic words on the subject of the Government refusing Dr. Hunter's request:—"This liberal proposal was coldly neglected by the ministry, and, therefore, finally dropped by Dr. Hunter, who afterwards directed by his will that his museum should be sent at a limited period after his death to the college at which he had been educated; so that unfortunately, perhaps, in some respects, for us, but happily I hope for Scotland, this treasure now enriches the stores of the University of Glasgow. But whatever

may be thought of this imperfection in the policy of the administration of that period, especially as it may now be contrasted with the wiser views of a later and more enlightened cabinet, I cannot help being of opinion that its consequences have not been injurious to us upon the whole; and that the continuance of Dr. Hunter's lectures and dissections on the free and independent plan on which they were originally commenced, was far more beneficial by the example they held out, and the spirit they diffused, than they would have been if circumscribed by the formalities of a public establishment, which, however greatly superior to anything then existing, we must now see, could not have been commensurate with the present extent and necessities of the Empire." Dr. Hunter had amassed a fortune by hard work, yet in the spirit of the true philanthropist, and with the noble ambition of benefiting future generations, he resolved on undertaking some scheme which would be for their blessing and his own fame. The Hunterian Museum has called forth the admiration of all intelligent visitors since its foundation in London; many eminent friends, old pupils, and others who knew the 'adventurer,' as he was called, only by name and fame, contributed specimens; and of these gifts he said with genuine manliness yet characteristic modesty—"I look on every gift as a present to the public, and

consider myself as thereby called on to serve the public with more diligence." Dr. Hunter himself at one time said, "I have collected such an anatomical apparatus as was never brought together in any age or country." The museum was transferred to Glasgow in 1807. He may be said to have commenced the era of great medical museums. Sir Hans Sloane founded the British Museum; but it was not a medical museum, although it reflects the highest credit on himself and the profession of which he was a member. Dr. Sloane, who lived till upwards of ninety years of age, had the high honour of following Sir Isaac Newton as President of the Royal Society.

In medical museums William Hunter led the way, and they have proved of incalculable value. In the University of Glasgow may be seen the choice collection of Dr. Hunter. The Royal College of Surgeons of England has assumed new dignity, surrounded by the collection of John Hunter. These are more like the successive works of many men enjoying royal patronage or national support, than the work of private professional men. The museum of Dr. Matthew Baillie, the Hunters' nephew, went to the Royal College of Physicians in London. The collection formed by Wilson and Sir Charles Bell, which filled the place of William Hunter's, removed from

Windmill Street, is, with numerous additions, the Museum of the Royal College of Surgeons in Edinburgh.

William Hunter's museum was begun for the purpose of illustrating his lectures; and at first its chief value consisted in the preparations illustrative of the changes in the gravid uterus, and in those relating to diseased structure; and in the catalogue the latter is replete with most interesting pathological information on a great variety of subjects. It gained him ere the close of his life the reputation of being one of the greatest pathologists at that time in Europe.

The museum was not confined to anatomical preparations, human and comparative, or to specimens of disease merely, although the collection of these was wonderful, and, thanks to hints from Albinus, is in beautiful preservation. Many of the preparations are to this day marvels to the scientific world. In fact, William Hunter was a perfect master in this field, and so inspired and taught his brother John, that he literally, scalpel in hand, cut his way to immortality. Above all these, to the medical scholar, is the anatomical collection abounding in interest, not so much because of the number of specimens, but on account of the rarity of those that are to be found. There is one injected specimen which alone is worth going from London to see—so says an eminent physiologist

Fig 1.

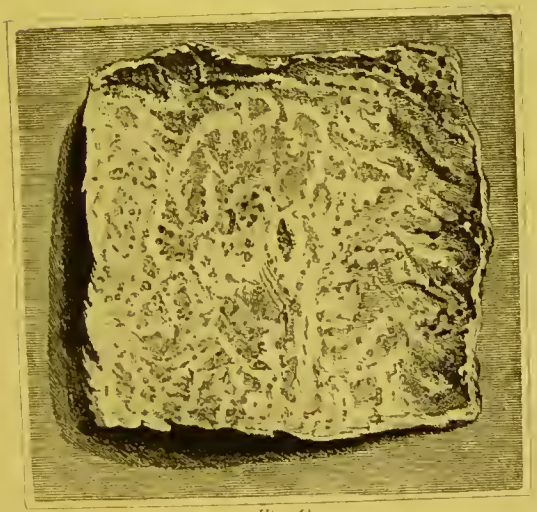

Fig 2

—the face of a child which has been divided into two lateral halves, that the section of the brain may be exposed, but in which the features are so wonderfully preserved, that after a hundred and forty years the face seems still to live. In this brain the medulla oblongata is also more perfectly exhibited than perhaps in any other specimen anywhere extant. Dr. Macewen, the distinguished Professor of Surgery, has reproduced in his recent great work on the brain one of the most beautiful specimens in William Hunter's museum (the pia mater, a portion of the membranes of the brain), which even yet is a marvel as an injected preparation. Inserted is a plate with two specimens of injected tissue from William's great work, and in another plate is represented the maternal circulation over which the brothers quarrelled. To the student of medicine the museum is without doubt a very El Dorado for exploration and excavation. Fortunately for Scotland, the Cabinet of the day did not see its way to recommend the purchase by Government of this magnificent anatomical and pathological collection. Though it is perfectly clear from the treatment this part of the museum has received in Glasgow, that William Hunter was justified and was certainly very far-sighted in offering his grand collection in the first place to London; the surgeons of England found in his brother John's museum a mine of

wealth in which the finest minds of the century have digged, and are still digging, and have found abounding treasure. Would the authorities of the University of Glasgow not have acted more in accordance with the spirit of progress if they had appointed, under the curator, a man with the true instincts of the science, who would have devoted himself to the pathological museum, and thereby have directed the attention of students into this channel? Instead of something further being done to advance Pathology, what was intended to be a bright and shining light has been in a great measure buried out of sight. Now that our University Court is so active, and the Professors so willing, could Government, which has done so much for John Hunter's museum in London, not be approached for a grant for the support, elucidation, and extension of the Hunterian Museum in Glasgow—a museum so valuable in all its departments as William Hunter's most certainly is? If such a grant were procured, then the hope might be entertained that the pathological section would take a foremost place in the museum,—a position we know from the life of the Founder it was intended to fill.

But the museum was not limited to anatomical preparations. Dr. Hunter was a man of very fine taste, and he had a great desire to educate the members of his own

profession, as well as the public, in this respect, and to afford opportunity to all of acquiring a rich and varied culture. William Hunter was a great teacher, and it was his ambition that his works, his bequests, should live and speak after him; it is not too much to say that there never has been gathered under one roof by one man, a collection so vast and varied and so well calculated to advance the wider culture of the members of the profession, whose interests he had so greatly at heart. To describe this marvellous museum would be an impossible task in a memoir like the present. Whether we turn to the art department, to the books, to the coins, to the natural history, or to the anatomy, there is to be discovered treasure upon treasure. What says Sir Benjamin Ward Richardson?—"For my part I hardly consider I have been to Glasgow, if, when there, I am not able to get to this place of fascination . . . and pick up something new that shall become a constant recollection." Let us begin with the Art Gallery. Thanks to Professor Young, the courteous curator of the museum, there is a catalogue of the pictures. To arrange the coins chronologically is also the ambition of Professor Young. This is a desideratum, and would be an inexpressible boon. There is no authority more able or competent to accomplish such a task, which certainly appears somewhat

Herculean in its proportions. We find among the pictures examples of some of the grand old masters, as Salvator Rosa, Titian, Murillo, Rembrandt, Châdin, Sir Joshua Reynolds, Raeburn, with many others. And we have portraits of many worthies we meet nowhere else, and whom it is a delight to know as they appeared in the flesh. Let us note a few of the finest and most interesting. There is a portrait of the founder of the museum, William Hunter, by Sir Joshua Reynolds; a portrait of Dorothy Hunter, Hunter's sister who married the Rev. James Baillie, minister of Bothwell, latterly professor of Divinity in the University of Glasgow, and was mother of Joanna Baillie and of Dr. Matthew Baillie. This portrait is by Robert Edge Pine, who also painted portraits of William Hunter and the Rev. James Baillie. Many of the works of this artist afforded scope for the genius of some of the finest mezzo-tint engravers. The portrait of John Hunter is by Graham Gilbert, and is a copy of the famous portrait painted by Sir Joshua Reynolds, which hangs in the Council Room of the Royal College of Surgeons of England. There is a portrait of Dr. Cullen by William Cochran, who received his first instruction at the Academy of Painting in Glasgow, founded by the two celebrated printers, Robert and Andrew Foulis. He was sent to Italy to study under Gavin Hamilton. A notable portrait is that of Vesalius, by Titian. Dr. Radclyffe, by Sir Godfrey

Kneller; Sir Isaac Newton, Dr. Charleton, Dr. Arbuthnot, contemporaries of William Hunter,—from Dr. Mead's collection—are all fine and in rare order. Lady Hertford's portrait is by Alexander Roslin, a Swedish artist. He worked in Paris and gained a prize in competition with the famous Greuze for a family portrait of the Duke of Rochefoucauld. There is a portrait of Zachary Boyd, a name well known in Glasgow. He got the rudiments of his education at Kilmarnock, entered upon his studies at the University of Glasgow, in 1607 went to Saumur University, and studied there under his cousin, Robert Boyd of Trochrigg. In 1611 he was appointed a regent of that University and is said to have declined the principalship. He was minister of Notre Dame in 1617; of the Barony Parish, Glasgow, 1628; Lord Rector of Glasgow University, 1645. His bust is also in the museum; it adorned the old College Court for over two hundred and eighty years. There is a portrait of Robert Boyd of Trochrigg, professor of philosophy at Montauban, of theology at Saumur, principal of Glasgow University, 1615 to 1625. A portrait of William Harvey, of immortal memory, is by Van Bemmel. The great anatomist is represented in his old age, with a pillar of Fame in the background. The portraits of eminent rectors and professors since the time of William Hunter are numerous, and do credit to the Scottish school

of portrait painting. From the mighty Burke, Lord Rector (1783), a giant in intellect, in feeling as unsophisticated as a child, to the great Grecian scholar who has just gone from amongst us, Edmund L. Lushington, Professor and Lord Rector, of whom the late Poet Laureate so sweetly said—

> "And thou art worthy; full of power;
> As gentle, liberal-minded, great,
> Consistent; wearing all that weight
> Of learning lightly like a flower,"

Raeburn, Watson Gordon, Graham Gilbert, Daniel M'Nee, have reproduced to the life the features of a most interesting and brilliant class of men. The visitor will find here quite a galaxy of the men who have stamped upon the Scottish nation its intellectual character.

Let us not forget two of these men, each the greatest in his own sphere, who are represented in exquisitely chiselled marble, Adam Smith and James Watt. There are also busts of Thomas Campbell, by Baillie, R.A., cut in 1826, the year he was Lord Rector; and Gavin Hamilton, historical painter, by Hewitson.

In the collection, besides oil paintings, there are many beautiful impressions of rare old line engravings, principally by Sir Robert Strange. To all intents and pur-

poses the art of line engraving, as it was then practised, is dead. When the burin is made use of on the copper plate, and plied laboriously and minutely by the hand of the artificer, the product is line engraving. This is the most valuable kind of such work, for in every touch we see and trace the skilful hand guided by the unerring eye. So always does the work of hand and brain united, transcend in value that of the dead and soulless machine, however admirably it may do its part of representation and reproduction; consequently, to many the decadence of the arts which demand this union is a matter of real sorrow. Dr. Hunter and Sir Robert Strange were intimate. The Doctor had thus opportunity of procuring from the artist himself first impressions from many of his finest plates, which are to be seen in the museum. Strange was an Orcadian; he was studying art in Edinburgh when the "young Chevalier" became a romantic factor in Scottish history. He joined the Jacobites, and was appointed engraver to the Prince, whose portrait, with those of many of his officers, he drew in pencil and engraved. Strange, it is said, fought at Culloden, but escaped to France. In Paris he studied under the great Le Bas. In 1751 he returned to London, at a period when historical engraving had made little progress in England, and became the Father of that arduous and difficult branch of the art in this

country. He received the honour of knighthood, and died in 1792. His style shows a combination of purity, breadth, and vigour, which has scarcely been equalled.

From the engravings we naturally come to the books. Dr. Harwood said long ago of the collection, "This is the most magnificent treasure of Greek and Latin books accumulated since the days of Dr. Mead." Captain Laskey, who compiled the catalogue, says that this department of the museum of Dr. Hunter is one of the most valuable depositaries in Britain of the literature of past ages. It comprises more than 12,000 volumes, in the highest state of preservation, among which are many beautiful specimens of almost every press since the introduction of the art of printing. The compiler of the catalogue gives a list of the books printed abroad in the 15th century, and then remarks that it will be found to contain almost every work in classic and foreign literature known to exist previous to the 16th century. The books in vellum are sumptuous and splendid performances. One instance only shall be given—the works of Plato, *Platonis Opera apud Aldum*, 2 vols. folio, Venet. 1513. Dibdin, in his *Northern Tour*, says, "Here is a lion among books that would create a roar sufficient to make the whole forest of the world ring."

From the English press, there are twelve Caxtons, and as

many Wynkyn de Wordes, and many other important and rare works printed with black letter; the best editions of the Chronicles of Hollingshed, Fabian, Sleidane, etc.; Hakluyt's Voyages; Purchas his Pilgrimage, 5 vols.; The Expedition into Scotland, 1548; Syr Thomas More, Supplication of Soules, 1530; Syr Thomas Elliot's Works; Ascham's Schoolmaster, 1571; Poetry and the Drama; Shakespeare's Works, 1st edition, folio, 1623; Spenser's Fairie Queen, original edition, folio; Bocha's Tragedies; Lingua, or the Combat of the Tongue; etc., etc.

From the Scottish press Dr. Hunter not only procured the splendid and, for accuracy, unrivalled books printed in Glasgow by the brothers Foulis, but also made considerable exertion and was eminently successful in procuring specimens of early Scotch printing, thereby enriching the collection with many matchless copies of exceedingly scarce books of this class. Amongst them are Syr D. Lyndsay's Works, original edition; Discipline of the Kirke; Knox's Exposition of the Psalms; Patten's Expedition; Terrentianus ci,i,xxciij, ex Officina Sanctandreana; Watson's History of Printing; Anderson's Numismat. Scotica, original edition, etc.; Sallustius, 12mo, Stereotype edition by Ged, Edin. 1744. This book completely disproves the claim of the French to the original discovery of stereotype printing.

The greatest attention and diligence appear to have

been exerted to procure the most early and choice copies of every distinguished work in medicine, natural history, natural philosophy, and the natural sciences, many of which are most splendidly decorated; those of an early date have the curious descriptive wood-cuts.

The manuscripts are numerous, exceeding six hundred volumes, in almost every language. Many are written on vellum, beautifully enriched with gold ornaments, and otherwise splendidly illuminated. Several are in gorgeous antique bindings, many are superb missals of exquisite and unrivalled beauty. There are very valuable Oriental manuscripts, both ancient and modern; classic authors in manuscript from before the invention of printing; many authentic and original historical documents and collectanea of miscellaneous subjects; many of Old English and Scottish poetry.

The preceding concise remarks on a small part of the riches preserved in this literary treasure will be sufficient to show how necessarily important such a description must be; and how very desirable an extended Catalogue *Raisonnée* of the whole would be to the literary world. Such a catalogue of this collection is truly a desideratum in Bibliography. The unknown volumes it would discover might afford matter of the first importance. This is the opinion of the authority, Captain Laskey, to

whose catalogue we are indebted for the information given here.

Although the value of the pictures and library has been estimated at a very large sum, by those competent to judge, still it is said the most valuable portion of the museum is the collection of coins and medals. They are specially rare and precious. "This grand assemblage of numismatic rarities," says Captain Laskey, "was acquired by the most persevering industry and unbounded liberality of expense, and surpasses that of every other cabinet now in existence (1813), that formed by the kings of France during a succession of reigns excepted. The latter, before the formation of Dr. Hunter's collection, was without a rival, but in many respects it is now confessedly inferior." Not long ago the late French ambassador, M. Waddington, spent some weeks examining the specimens at Gilmorehill. Even the British Museum gives way in this department to the cabinet of Dr. Hunter. Before the removal of the cabinet from London to Glasgow, the Trustees of the great national institution offered the immense sum of £20,000 sterling for the divisions of the first and second series alone, and to return all the duplicates, together with casts of the originals which had been kept.

The old Scotch proverb, "It's an ill win' blaws naebody guid," has again been verified in the case of the

Hunterian Museum. Through the ill-advised proposal on the part of the University Commissioners to sell the coins the museum has been brought before the public in a way it much needed. As to William Hunter, he was well-nigh forgotten, and as for his possessions bequeathed to Glasgow, only a few of the *cognoscenti* knew anything about them. The free air of public opinion admitted through the coin-controversy has already done much good. It has been asked, What purpose do the coins serve,—what is the object of a numismatic collection? The answer to this has been well given by Dr. David Murray: "Of the immense value of a well-arranged and extensive collection of coins as an adjunct to the study of history and archæology, and the arts of design, it is almost unnecessary to speak. The expenditure of large sums of money on the numismatic department of every great museum is sufficient evidence of it. Year by year the study of numismatics is extending, and is being brought more into use in confirming and correcting the statements of ancient authors, in illustrating manners and customs, and in tracing the development of art. Hardly a volume of importance dealing with history or archæology but is illustrated from the coin room. Not many years ago Sir John Evans reconstructed the whole early history of Britain from the coins of her kings, many of the best examples of which

William Hunter's Medal.

he obtained in the Hunterian Museum; and nearly every numismatic work of importance is indebted to the same collection. The great Italian medalists are well represented in this collection, and without a reference to them it is impossible properly to understand Italian art."

> "The medal, faithful to its charge of fame,
> Thro' climes and ages bears each form and name,
> In one short view, subjective to our eye,
> Gods, emp'rors, heroes, sages, beauties lie."

Numismatists have usually given the name of medals to those coins that have been struck or cast for particular purposes and on extraordinary occasions—in commemoration of victories, treaties, coronations, and other important events, or in honour of remarkable persons—in distinction to those which have been issued and generally circulated as money. The Brothers Hunter have each had a medal struck in his honour. They are finely executed in bronze. The medal of William, which is reproduced here, hangs in the museum. There is also an elegant silver vase in the medal room, which was presented to Dr. Hunter by his students.

Though we have proof in the specimens that have reached our times that the ancients were not less successful in the medallic than in the other arts of design, it does not appear that works of this class were sought

after and preserved with the care bestowed on the productions of the sister arts. None of the classic writers give any account of collections of medals and coins among the Greeks, and it is not until a somewhat late period that we find any distinct notice of a taste arising for them in Italy. Augustus was the first who showed any interest in the subject; he was in the habit of presenting to his friends medals of foreign countries and princes as valuable marks of his favour. Petrarch seems to have been the first who in modern times made coins subservient to the illustration of history and biography. The Emperor Charles IV. had expressed a wish that he would write the lives of eminent men, and place him among them. Petrarch boldly told the prince he would do so whenever his life and conduct merited it. It was after this that he presented to Charles a collection of gold and silver coins, bearing the representations of distinguished men.

The coins and medals in the Hunterian collection, as has been said, are specially rare and precious. Thanks to Dr. Charles Coombe, the learned and intimate friend of Dr. Hunter, who published a catalogue of the first three divisions in this cabinet, with elegant plates of the coins, —first, the Greek cities, second the Persian, Phœnician, Samaritan, Punic, etc., and third, the Greek kings—these are all fully described, and form one of the most superb

and valuable as well as authentic works ever published on numismatic science. Still following Captain Laskey, mention will be made of a few specimens for the sake of interest. In the collection is a coin in second brass of Antoninus Pius; the reverse a female figure sitting on a craggy rock, the waves beneath her feet, the shield standing on her right side, with a military ensign erect; round the legend, Britannia Co., meaning the Colony of Britain. This coin is excessively rare, and of great value. A Briton in contemplating this coin will perhaps have his gratification diminished when he finds that it records the conquest of his native island. There is a tetorobolian dicholchos or quarter obolus in silver, the most minute coin found, weighing $2\frac{3}{4}$ grains. These coins being so small, it cannot be wondered that most of them have perished. There is also a dilepta of the Greek copper coinage of Athens. These little pieces have the symbols of two owls impressed on them in imitation of the silver diobolus. There is a gold coin of Thebes, weighing 59 grains, very rare; also a gold didrachm of Athens, $132\frac{1}{2}$ grains. Only one other is known, which is now in the cabinet of his present Majesty, who originally possessed both; the Queen procured this for Dr. Hunter. There are no less than fifteen Roman denarii with the double female head; —these are supposed to be of the earliest Roman coinage

known. We find also the ancient scruple, coined at the time when forty-five were struck from a pound of gold; also the didrachm or aureus of LX. and XX. The Otho of large brass, struck at Antioch, is also very rare.

There are about four hundred medallions, exclusive of Egyptian, all of great rarity, and reckoned of such princely purchase, that even in the richest cabinets twenty or thirty are esteemed a great acquisition. The most remarkable among these is one struck at Syracuse, the only one perhaps existing; it formerly belonged to Dr. Coombe, and was engraved by him, though not published; it is of the most exquisite workmanship by a Sicilian artist, in a state of the highest preservation, and is of copper about two inches in diameter; upon one side is a female head surmounted by a helmet, on which is a Caduceus and Roma; upon the other a man's head with a helmet wreathed with laurel, and the letters M.M. Dr. Coombe's opinion is that this fine piece was struck at Syracuse in honour of Marcus Claudius Marcellus, who besieged and took that city 210 years before Christ. The striking of a medallion which exhibits the portrait of Marcellus is alluded to by Plutarch as one of the signal honours awarded to him. There is also a unique medal of Otacilla, and two brass medallions of Augustus, struck by an African Colony,—very rare. On the reverse is a

Bacchante with cup and thyrsus, and a panther at her feet, with Punic characters. Among the smaller medallions or medallets, which in most cases are scarcer than the larger, will be seen one of Severus, and Julia Mamæa face to face; on the reverse, three figures, with "felicitas temporum." There is a silver hemidrachm of Alexander the Great, the only one known; it represents him very young, and is supposed to have been struck soon after his coming to the throne. There is also a unique coin of Gangra in Paphlagonia, with a view of two castles and a house between them. This coin formerly belonged to Dr. Coombe, by whom it was engraved, and was originally brought from the East by Mr. M'Kenzie.

Among the Persian coins are some very rare specimens, as one with a ram on one side, and a long legend; the reverse, a sacred symbol. Another has a king on horseback on the obverse, and on the reverse, an archer kneeling in the act of shooting; it weighs 168 grains, and is supposed to be a silver didrachm. The great number of Persian coins adds much to the value of this superb cabinet. There are coins of the Sassanidae (of which there are twenty-two in silver, and seven in second brass), and Arsacidæ; among the former will be seen that famous coin brought from the East by Mr. Crofts; it bears three portraits on the obverse,

supposed to be the king and queen, with the prince. Among the coins issued by Greek cities many are unique and of great value. It will be impossible in our limits to particularise more than a very few. First, a silver coin of Macedon, struck by Perdiccas II.; it is a hemidrachm, minted about 458 years before Christ; a silver tetradrachm of Pausanias, struck about 398 years before the Christian era; a silver Hemidrachm of Lysimachus; reverse, a lion. This is supposed to be the only true portrait of this prince in existence, and was minted about 268 years before Christ. There is a very rare coin of the kingdom of Syria, representing Tigranes the younger, King of Armenia; reverse, his sister; they were son and daughter of the famous Tigranes; it is of the third brass. Of the kingdom of Cassandria, one solitary coin is known and is here preserved; on its obverse is a man on horseback, with the Greek legend, king Apollodorus; on the reverse a lion. This king flourished in the time of Antigonus Gonatus, King of Macedon, 278 years before Christ. Of the kingdom of Arabia there is a unique coin of Manus; reverse Abgarus in thin brass. Of Palmyra, we have a unique Greek coin in third brass, of Timolaus, son of Zenobia.

Among the coins of the Roman Emperors will also be found many rare and curious remains, as a Cneius Pom-

peius, the younger; a Pescennius Niger of the first brass, unique, struck at Smyrna; a Nigrianus in third brass; an Egyptian coin of Julius Caesar, the head laureated; reverse a crocodile, on the exergue Ægypto; very rare. There are in this cabinet no less than eleven silver coins with the tortoise on one side, and an indented mark on the other, about which medallists and antiquarians are so much divided in opinion. They are with some plausibility given to the Island of Ægina, and are supposed to have been struck in the days of Phidon. This king, according to the Arundelian marbles, reigned 820 years before Christ. If this be correct, these are of the most ancient coinage known.

Having enumerated a few of the rarest coins of other countries, we shall proceed to describe a few of our own. There is a unique coin of Egbert, King of Kent; a skeatta, coined about the year 664. We find a penny of Richard III., very rare; two skeattas of Beorna, King of the East Angles—these are unique; a skeatta of Eadwald, King of Murcia, one other only is known; one of Egbert, son of Offa, King of Kent, of the same rarity and value; a unique coin of Beorthric, King of the West Saxons; a unique coin of Edwin, Chief Monarch, with his head; one of Regnald, King of Northumbria, very rare. Among the gold coins are the quarter florin of Edward III., struck in

his eighteenth year, unique or nearly so, and the gold chaise of Edward the Black Prince, unique, figured by Pinkerton in his *History of Medals.* We find the pattern guinea of Queen Anne, with A.R. in the centre of the arms on the reverse, very rare; the Ryal of Mary Queen of Scots, very rare; on the reverse are her arms, 1555; the French testoon, representing Mary and Francis face to face, is so rare that Dr. Hunter paid ten guineas for it. The Trial piece for Crown, struck by that skilful engraver, Thomas Simon, as a petition to Charles II., is in the finest preservation; it is the greatest effort of skill known in the numismatic science, and has a double row of letters round the edge; it is said that not more than twenty were ever struck. They are now so very rare that Captain Laskey, a few years since, at the sale of Mr. Tyssen's cabinet of coins in London, saw a specimen, not in fine preservation, fetch the sum of one hundred guineas. The coins of Oliver Cromwell are also of the engraving of Simon, and stand unrivalled, the fine frost work of the flesh giving them a beautiful appearance. The beautiful coinages also of Blondeau, Ramage, and Rotier, who engraved dies for Charles II., are all here in the highest state of preservation; they were mostly trial pieces, and have not been in circulation. At Mr. Tyssen's sale Ramage's pattern for a crown sold for £31 10s., the half-crowns, £26 5s.,

the shilling, £26; Blondeau's sixpence brought £7, half-crowns, £7, half-crowns with Truth and Peace, Petre Blond, £30 10s., and a half-crown with Reddite Quae Caesaris, £45.

Here is also a fine collection of the rude pieces of silver used as coinage during the unfortunate troubles of Charles I., known by the name of Siege Pieces, bearing the names of Newark, Carlisle, Pontefract, etc., stamped with S.D., S.D. D. their value in numeral letters, as II., VI., V., IX., and VI. It is singular that two of these pieces are evidently cut from the same piece of plate, probably from a silver cup or tankard, as they perfectly match. We have also specimens of all the coinage minted by that famous artist Mr. Croker, the engraver for Queen Anne's mint. Among these are the Trial pieces, commonly called Queen Anne's farthings, struck in gold, silver, and copper. Of these there are four dies, as 1713 the most common, 1714 the next in rarity; the third has on the reverse, *Pax missa per orbem*, where the queen is seated under a canopy; and the fourth, which is the most rare, has on the reverse Britannia driving the edissarium, or antique chariot. Almost every one has heard of the farthings of Queen Anne, but the truth is, they are of no great value. Anne being always averse to a copper coinage, though it was much wanted, Mr. Croker exerted his abilities in engraving these dies,

hoping their elegance and beauty would merit her attention, but it was to no purpose; the queen could not be brought to hear of a copper coinage, and the nominal Queen Anne's farthings are these Trial pieces. Among the British medals will be found that very elegant gold medal of David II., King of Scotland, struck when that prince was a captive in England; only two are known to exist; they were discovered a few years since in Yorkshire. There is also that curious silver counter figured by Snelling, supposed to have been struck about the time of Henry VI.; it has arms on both sides, with this legend, on the obverse, Jehan Strangeways Escuier; on the reverse, Tresorier de Normandie. Almost a full and complete series of all the medals in gold, silver, and copper, struck in this and other countries, will be found in this cabinet. Thanks are due to Capt. Laskey for this epitome of the numismatic riches.

We cannot do more than mention the splendid specimens of natural history which adorn the museum, and were in part acquired from the famous Captain Cook; or notice the beautiful collection of shells and corals which the renowned Dr. Fothergill left to his "valued friend, Dr. Hunter, at a reduced price, in order to decorate the museum which all men of science admired." The geological department is of intense interest to students of that

science. Dr. Hunter selected his specimens with the utmost care, and we know from accounts to which there is access, he did so regardless of expense. This portion of the museum has had bestowed upon it the greatest attention by John Young, LL.D., F.G.S., the sub-curator, whose scientific arrangement is admired by all who are conversant with the subject. The Eck and Lanfinn collections of gems and minerals enrich materially this section of the museum. The eminent collector of these inestimable treasures enriched them with the most munificent liberality. It is not too much to say that money, used however judiciously and liberally, could scarcely bring together again another collection so vast and valuable as we have in William Hunter's legacy.

Fortunately for Scotland, the Cabinet of the day did not see its way to recommend the purchase by Government of this magnificent collection. Dr. Hunter, moved by the

> "Spur that the clear spirit doth raise,
> (That last infirmity of noble minds),
> To scorn delights, and live laborious days,"

lavished the earnings of his profession in establishing an anatomical museum, in accumulating pictures, books, coins, medals, geological specimens, fossils, and other objects,

and then offered the whole to the public; undertaking, at his own expense, to erect suitable buildings, and endow a professorship of anatomy in perpetuity, on the sole condition of having a piece of ground granted to him for the purpose. The rare generosity of such an offer could only have been equalled by the singularity of its refusal. At once, however, Dr. Hunter saw an eligible site. Bearing in mind the benefits he had received at Glasgow University, he resolved on bequeathing it to his native city. In the first instance it devolved upon his nephew, Dr. Matthew Baillie in liferent, and thereafter the whole was bequeathed to the College of Glasgow. Dr. Baillie, with admirable self-denial, renounced all claim, and the whole was made over to Glasgow University. £8000 was left to provide for its accommodation, its support, and further augmentation. A magnificent and appropriate building, from an admirable design by Mr. Stark, was erected in the gardens of the University for its reception, and the multitudinous and valuable materials of which it was composed were arranged and displayed with a degree of scientific knowledge and taste, creditable alike to the memory of the donor and the liberality of the College. The Hunterian Museum occupied the east side of the third and last quadrangle of the old College buildings in the High Street. The cost was £12,000. The building itself was

hexastyle. The front formed a Roman doric portico of six columns rising from a flight of steps; and behind this there was a recess and a second row of columns. The architecture exhibited the temple style, being crowned with a stone cupola, having glass in the top, and was esteemed the best imitation of classic building in Great Britain.

What stirring games and earnest, what friendly rivalry in pleasant buoyant talk made this a pleasant spot as students paced around this Grecian temple; who that ever wandered through that classic region of the old College with its quadrangles — of which the Hunterian Museum formed the chief part of one — could fail to be thrilled by the associations of the locality? Time-honoured and fragrant memories clustered around the memorable pile. The great magician Sir Walter Scott knew it well, and has, in the charmed pages of *Rob Roy*, commemorated the beauty of its gardens, rendering famous for ever the scene of the encounter between Francis and Rashleigh Osbaldistone, which he describes most appropriately as taking place here, in a secluded spot by the banks of the Molendinar on the old College green. Many of the associations of the old place have in these utilitarian days utterly disappeared. Now the sound most familiar to the visitor's ear is the snort of the steam-engine and the shriek of its whistle. But surely

it is some consolation to know that we are indebted to the inventive genius of James Watt, now developed so advantageously over all the world; for he at one time, when the craftsmen of Glasgow would not receive him, found refuge within its hoary walls. In 1870 the contents of the museum were removed to the west—as experience has proved, out of reach of the people. The flitting no doubt made a heterogeneous and not unpicturesque procession; such a procession as probably never passed through any city, forecasting, as a humourist then remarked, the time when the lion would lie down with the lamb, and the leopard with the kid. The vast collection was safely housed in that palatial edifice, the new University which now crowns the heights of Gilmorehill. No doubt the structure is fine, the situation unrivalled, and the spot a choice one for the "classic groves of academe"; still, considering the limited accommodation for the museum, it has been felt to be a distinct loss that, with the contents, the old Grecian temple could not have been deported thither also, for many a decade must elapse ere the consecrating hand of time shall have hallowed this new scene with memories so precious, and associations so venerable.

The New College, Glasgow

CHAPTER VI.

JOHN HUNTER—HIS LIFE.

JOHN HUNTER, the youngest of the family, was born at Long Calderwood, on February 13th, 1728, although he used to say himself that he was born on the 14th, and the Hunterian Oration is delivered on the 14th at the Royal College of Surgeons; but the 13th, as given above, is the date entered in the Parish register. At the time of his birth his father was nearly seventy years of age. His father lived till John was ten years old, and by this time the boy's education must have commenced; but, somehow or other, school had no attraction for John, he being quite a different boy in this respect from his brother William. Some of his many biographers blame his mother, but that she was to blame does not seem quite clear. She was in a position to know thoroughly the advantage of education to her son, and no doubt did what she could to instil its value; but aversion to school training was in the nature of the lad, and even his mother could not alter it.

His mother was a daughter of Mr. Paul, treasurer of the city of Glasgow, and it has been abundantly proved by the conduct of her other children that she was a most estimable and competent woman. At any rate, John reached the age of seventeen comparatively uneducated, to all intents and purposes so far as school was concerned, without any education. He could neither read nor write—a fine plight for a Scotch lad to be in at seventeen. What was to become of him? Most of his countrymen at the time would readily admit that the prospect of his becoming great in science was by no means bright. What a splendid revelation in this respect, however, the issues of his life proved. John Hunter had a good moral training, he was a generous youth, had an iron will, and never suffered from want of backbone. The worst that was said of him was that he was careless of school, and fond of the sports of the field; he was not an evil boy, he made a mistake as many boys have done in despising school, but his career has proved that his splendid genius enabled him to overcome to a wonderful extent, but never wholly, this blunder of his early years. He was no idler, it appears; the boy's disposition was not understood. He tells us himself what he wished to learn, but he could not get information. His father could in some measure have supplied it, but he was taken away ere he could be

Sir Joshua Reynolds, pinxt. Arman fecit

John Hunter. F.R.S.

of much service to this son. His own words are—"When I was a boy I wanted to know about the clouds and the grasses, and why the leaves changed colour in the autumn; I watched the ants, bees, birds, tadpoles, and cadis worms; I pestered people with questions about what nobody knew or cared anything about." Why, here is the philosopher in embryo; Pope has it, "The child is father of the man." As has been said, this was an education that was perhaps the very best he could have had for sharpening his senses to observe, and bringing his reasoning powers to bear upon problems of the highest interest. Hunter, as a boy, gave promise simply but truly of the man of science he became, when, as Sir James Paget says, "he was impelled to obtain knowledge by intellectual self-exertion, and like an athlete restless in the exercise of his strength, so he could not rest; he could not but search, and watch, and question nature; he must compel her to answer, and he could set no limit to his search. Within the range of the great world of life he must seek by every method of inquiry, every kind and degree of knowledge." Happily for him and for us that, working in freedom from the tyranny of much cramming, his immortal mind was permitted to run without impediment its immortal course. John Hunter's career proves conclusively that the best of a youth's education is not always gained at school.

James, the eldest of the family and only remaining son who survived infancy, has been merely incidentally mentioned. The early years of James were devoted to the study of law; but, visiting London, he became captivated with the pursuits in which he found his brother William engaged, and immediately resolved to abandon the search after human records for the contemplation of Nature. We have it on excellent authority that this brother, James, was a young man of such peculiarly pleasing manners and with talents which displayed themselves with great readiness very early in life that, had he lived to practise Physic, there was a moral certainty of his success beyond any other in the profession. James Hunter was an heir of unfulfilled renown. He suffered from hæmoptysis in London, and, becoming convinced that his health was broken, returned to Long Calderwood, where, not long after his return, he died, not however before what seems to have been his life's mission was fulfilled. Recounting his experiences in London and the brilliant doings of his brother there, he unwittingly, but no doubt certainly and effectively, inspired his youngest brother John with the idea of embarking in such work in the mighty city.

So destitute, however, was John of all literary acquirements, there was apparently no recourse for him except to engage in some form of business that would give

Twyn after Holland, Sculp. Annan fecit

John Hunter F.R.S.

employment to his hands rather than his head; and one of his sisters, of whom he was extremely fond, having married a cabinet-maker in the city, who appears to have got into difficulties through dissipation, John in his generosity started for Glasgow with the object of assisting his brother-in-law to help to mend matters, if he could. For some time he continued learning to make chairs and tables, and doing the usual work of a carpenter's shop, and such might quite probably have been his life's employment, but for circumstances which, at the time they occurred, were deemed unfortunate. Thus, under an unmoving cloud, would have been hidden that genius which afterwards so distinguished its possessor in the highest and most beneficent walks of scientific discovery. Notwithstanding John's generous exertions, which continued for three years, his brother-in-law failed in business, and the youth was again, so to speak, thrown on his own resources. In Glasgow, no doubt, the lad got some valuable lessons from the foolish conduct of his relation. He would have it forced upon his mind that application and perseverance are the only true guides to success, even for genius. He would also learn then the lesson of self-control, the most invaluable of all lessons, and one by no means always learnt at school or college. It is but reasonable to conclude that the very best thing that could

have happened to John Hunter in the circumstances was to have spent some time at a mechanical trade :—

> "There is a divinity that shapes our ends,
> Rough-hew them how we will."

The marvellous dexterity he manifested in preparing specimens for his museum abundantly proves the important aid he derived from learning to use his hands at the ordinary trade of a carpenter. He was at this time in the twentieth year of his age. One is reminded, and most reverently recalls the memory, of Him Who is the Healer of the Nations for aye, Who spent His boyhood in a carpenter's shop. "There," as John Ruskin finely says, "we may be sure the work done was right good work indeed." John Hunter, doubtless at his wits' end by this time, wrote to his brother William in London, to see if he could find work for him in his dissecting room, intimating that if he could not, he meant to enlist in the army. Fortunately for science he received a very kind response —bidding him come at once. He started with a friend of the family for the metropolis, the two pursuing their journey, as was then the custom, on horseback. The meeting in London between the two brothers was cordial. This was in September, 1748—a fortnight before the autumnal course of lectures. William Hunter, in order to

form some estimate of his brother's talents, took him to the dissecting room, and gave him an arm, with instructions to display the muscles. John completed his task in a manner which utterly surprised his preceptor, who had been engaged for ten years in such work. He was immediately entrusted with an arm, the arteries being injected, and in this more delicate undertaking in which the vessels were to be preserved as well as the muscles, he was equally successful; so much so, that William, who was all neatness and order, did not scruple to prophesy that his brother would become an expert dissector. Arrangements were very soon made, by which John became an assistant in William's anatomical rooms, which had already gained celebrity on account of their educational advantages. There young Hunter first became aware of his latent powers, and got rid of the incubus which had long oppressed his soul—a new life broke in upon him. His ambition was aroused; industry, steady and unremitting, took the place of comparative idleness; and the undecided, wandering youth, stimulated by the new atmosphere in which he was daily immersed, assumed the attitude and the character alike of the philosopher and the student of Nature. Who or what brought about these wonderful changes in the life and conduct of this young man, so sudden, so unexpected? It is not difficult

to answer this question. It was simply William Hunter and the influence of his example.

John saw the wonderful things his brother was doing in building up a great anatomical museum, and it is therefore not surprising that his taste should have taken a similar direction. Under his brother's roof he found himself in his proper element. The mind which had recoiled with a kind of disgust from the study of languages and the dry routine of scholastic pursuits, was immediately aroused and attracted by the congenial objects which presented themselves on all sides. The dissecting rooms, the museum, the conversations and instructions of his brother and of the enlightened men he gathered round him, awakened faculties hitherto dormant. As if conscious of his own great destiny, he stepped forward at once and entered on that course of research and discovery which he continued with unabated ardour to the day of his death—a period embracing forty-five years.

His proficiency as a practical anatomist was so very rapid, that, before the end of twelve months, he was entrusted with the preparation of his brother's subjects for lecture, and in 1755 he was admitted as a partner in his brother's school. Long before this time he had gained great reputation among his class-mates as an

expert dissector and excellent anatomist. But highly as Dr. William Hunter estimated the accuracy and diligence of his brother, he had then not the slightest conception of the strength of his genius, the boldness of his inquiries, or the accuracy with which he could conduct them. He was engaged in the dissecting room under the direction of Dr. Simmons, the assistant who had charge of the room. John Hunter was now a medical student, and seems to have been under little restraint as to his general conduct; but a brother ten years older than himself must have had some influence over him. A part of his duties was to provide subjects for the dissecting room; no doubt he was of great use in this way, but he suffered much from having to associate with the bold, dissolute characters who stole bodies from the graves, well known as resurrectionists. We are told that one of the amusements in which he took particular pleasure was to mingle with the rabble in the shilling gallery of the theatres, for the purpose of assisting to damn unpopular productions placed on the stage—an office in which he displayed peculiar tact and vigour. It is said that this taint of coarseness and vulgarity was never entirely eradicated during his subsequent life. He was familiarly known among his brother medicals as Jack Hunter.

The advantages of his position, however, were cer-

tainly great to one so unacquainted with the subject, for there was at that time no other notable anatomical school in the metropolis. John Hunter, in being called to assist his brother, was not taken by surprise. Uneducated, he knew there was a lion in the path; he did not swerve nor turn aside, but resolved upon the mastery, and every successive triumph inspired him with confidence in that certainty of victory which made future conquests easy. What were obstacles to other men only proved incentives to him for further exertion. In the following summer the celebrated Cheselden, at the request of William Hunter, permitted John to attend Chelsea Hospital. Here he had scope for his ever-inquiring mind, here he had leisure to trace Nature in all her processes of disease and restoration, and here he probably first began to suspect that crude state of surgical pathology which described the process of ulceration as a solution of the solid parts into pus or matter. It was under this great surgeon that John Hunter received his first instruction in surgery.

His brother William could not have done better than place him under Cheselden, whose great merit was the simplicity and accuracy of his surgical practice. He employed the simplest and most direct operations to which his consummate anatomical skill rendered him in

all cases perfectly competent. He was the friend and associate of Pope, who valued him highly for his literary, as well as professional accomplishments. He continued to attend regularly at Chelsea during the summer 1749 and in 1750; but in the following year Cheselden was obliged to withdraw from his duties in consequence of an attack of paralysis. In 1751 he went to St. Bartholomew's Hospital and attended the practice of Mr. Pott, the famous surgeon.

John had lost his mother, November 3rd, 1751, aged 66. In the summer 1752 he visited his native place, and brought back to London with him his sister, Mrs. Buchanan, now a widow, who was always a great favourite with him. In 1755 he entered, as a gentleman commoner, at St. Mary's Hall, Oxford, intending to become a scholar and a physician, but he seems very soon to have given up this idea. His brother William was very anxious that he should abandon surgery and study medicine, which was at that time regarded, and perhaps not without reason, in the then existing state of the science, as a higher branch of the healing art. With this end in view it was deemed very desirable that John should have a respectable knowledge of Greek and Latin, as no physician could be considered properly educated without it. The effort, however, proved abortive, as it was against his true instincts.

When he is taunted with ignorance of the Classics, he fairly annihilates the enemy by means of his minute knowledge of his own special subject: "Jesse Foot accuses me of not understanding the dead languages; but I could teach him that on the dead body which he never knew in any language, dead or living." Hunter was now twenty-five years of age, and still he had no disposition to shut himself up within the narrow walls of a college, or to give up the idea formed soon after settling in London, of becoming a great surgeon. He looked on such schemes as a waste of time, and in referring to the subject some years afterwards, Sir Anthony Carlisle tells us he thus quaintly but coarsely expressed himself—"They wanted to make an old woman of me, or that I should stuff Latin and Greek at the University; but (with a significant pressure of his thumb nail on the table) these schemes I cracked like so many vermin as they came before me."

One cannot but regret that Hunter did not pay heed to the advice of his friends. A little stuffing of Greek and Latin would have very much improved his literary style, which was at times very obscure. The late John Inglis, Lord President of the College of Justice in Scotland, in his Rectorial address gives sound advice to students, which, confirmed by the coarseness resulting from the absence of such training in

John Hunter, ought to be all-powerful. He says: "Let no man beguile you by the jargon of a vain utilitarian theory. The chief end of primary, as distinguished from proper professional education, is not the acquisition of knowledge for its own sake. It is the development and purification of the moral nature; the training and strengthening and energizing of the intellectual powers; or, in other words, the formation of the character and the culture of the mind. When, therefore, shallow men prate of the uselessness of classical and philosophical study, and invite you to substitute for that invaluable training the acquisition of what they call useful knowledge, tell them boldly that the effect of the studies in which you are engaged, in liberalizing the mind, refining the taste, and purifying the heart, arises very much from this so-called 'uselessness'—that is, their inapplicability to any direct object of pecuniary or mercenary advantage—that this 'uselessness' is one of their excellences, because it is inseparable from their elevating influence." John Hunter felt through life his literary deficiencies, chiefly as a lecturer, the capacity in which his more highly educated brother so greatly excelled. He used to dwell on the advantage which is gained in regard to clearness of conception by the committing of one's ideas to writing, comparing the process to the taking of stock by a tradesman, without which he

cannot know with certainty either what he has or what he wants. Yet he himself continued to the end of his life an awkward, though by no means an unpractised writer. Like his brother William, however, he was conscious of his own power and merit. Dr. Gartshore, one day entering his museum of comparative anatomy and finding him busily engaged, exclaimed, "O, John, you are always at work." "I am," replied Hunter; "when I am dead you will not soon meet another John Hunter." He was right. John Hunter's genius has proved a mine in which the best trained and ablest men of the century have wrought, and one and all admit that the field is without any limit.

He seems very soon to have given up the idea of becoming a scholar and physician, for already he had entered as a surgeon-pupil at St. George's Hospital, in the hope of becoming at some future time a surgeon to that great institution. He continued to follow the plan of assisting in the dissecting room during the winter session, and attending hospital practice during the summer. At one time he became house-surgeon to the Hospital, the duties of which are such as particularly give the holder an insight into practical surgery. In the year 1755 his brother made him a partner in the school of anatomy, and he delivered a small portion of each annual course of lectures. He at first declined, owing to the difficulty he found in ex-

pressing himself being well-nigh insuperable. He continued applying himself assiduously to the acquirement of a more thorough knowledge of practical anatomy, and extended his inquiries from the human body to the structure of the inferior animals, procuring from the Tower and from the keepers of menageries subjects for dissection. He continued thus to work till 1759, when his constant and severe labours in anatomy, to which he had lately added comparative anatomy and physiology, began to affect his health so seriously that it became necessary for him to resort to a milder climate. In the spring of this year it was greatly feared that an attack of pneumonia, which had prostrated him, would be followed by phthisis, the disease which had cut short the promising career of his brother James. He was advised to have rest and change of air and scene, but a holiday without work was no holiday for him. He applied for an appointment in the army, and succeeded in being attached to the expedition to Belle Isle, a small island of France in the Bay of Biscay, famous for its pilchard fisheries. This was the spot for Hunter, affording scope for his wonderful power of research during any leisure time he could spare. He joined the army in 1761. To this appointment military surgery has been greatly indebted, Hunter's observations on gunshot wounds being among the

earliest and best contributions to that important branch of surgery. He afterwards went to the Peninsula, and remained there on active duty till the end of 1763, when a peace was negotiated, and the surgeon retired on half-pay. While with the army John Hunter also made experiments on snakes and lizards, to ascertain whether digestion was carried on during hybernation, and he instituted inquiries into the faculty of hearing in fishes. On his arrival in England, early in 1763, completely restored in health, John Hunter found that Hewson had succeeded him in the anatomical school, so that now there was nothing between him and the realization of his heart's desire—to become a surgeon in the world's great metropolis.

His struggle was long, arduous, and disheartening. He had nothing to depend on but his half-pay and his own indomitable will, stimulated by his necessities and by his lofty ambition. Like many a young man destined to attain to eminence, he literally carried his fortune in his own hands. Although full of energy he was not a man to make friends, or to inspire public confidence rapidly. His manner was abrupt, and at times even coarse and repellent. He possessed none of those arts which so easily please and fascinate people, and which so often do more in securing respect and success than the highest talent or the most consummate knowledge. He felt conscious of

his superior mental endowments, and therefore looked upon the world around him with a species of contempt which seldom fails to recoil with interest on its author. The promising Scotch youth, in his intercourse with army surgeons and gay society, had doubtless been led to form a very poor estimate of the profession generally.

The task he set himself was arduous in the extreme. Eminent surgeons possessed the field—Pott, the ablest and the best, stood foremost—and he was surrounded by other able men, Hawkins, Bromfield, Sharpe, and Warren. None of these men, however, with the exception of Pott, had any of the characteristics of Hunter, and therefore were little in sympathy with his labours. They were good operators, and, doubtless, excellent practitioners; but they were destitute of genius, and contributed little to the advancement of surgery, and nothing whatever to the mental patrimony of the race.

Hunter took a house in Golden Square. At first, and we are not surprised to learn the fact, his success was very small. He had not shaken off a certain roughness or brusqueness of manner, and the deficiencies of his early education he could not always conceal. At this time, and for years, Hunter had few patients, nevertheless science was the gainer, not the loser. His practice he regarded only as a means for carrying out those scientific investi-

gations to which he was far more attached, and which, while in the army, he had not ceased to pursue. He found it necessary to begin lecturing on practical anatomy and surgery, to enable him to go on with the work of his museum; but excellent as was his reputation, indisputable as were his qualifications, he never had a class of more than twenty pupils. Abernethy, one of his warmest admirers, says that he had not the happy talent of displaying the stores of his mind, and he actually wearied his audience by the number of facts he recorded, and the minuteness and accuracy with which he detailed them. Paget, however, remarks, that in spite of all this, his class included nearly every one who in the generation after him had any great reputation in surgery in this country; and however dull and confused his lectures may have been in delivery, the numerous copies of them that remain show that they were reducible to order and perfect clearness. Notwithstanding all his efforts, he was constantly obliged to borrow money for the purchase of animals, either alive or dead. In this way he spent all that he did not require for the necessaries of life. One day, it is told of him, that his cash being exhausted, and the temptation great, he went to his friend Nicol the bookseller, and thus introduced himself, "Pray, George, have you got any money in your pocket?" Nicol replied in the affirmative. "Have

you got five guineas? because if you have, and will lend it to me, you shall go halves." "Halves in what?" inquired his friend. "Why, halves in a magnificent tiger, which is now dying in Castle Street." Nicol lent the money, and John Hunter got the tiger.

Hunter's reputation steadily increased. About this period, 1767, an accident befell him, he ruptured a tendo Achillis—it is said while dancing—but his staunch friend Clift denies this, and says that it was in getting up from the dissecting table after being cramped by long sitting.

However this may be, whether we admit that this staid man of science did so far forget himself as on occasion to trip on the light fantastic toe,—it is quite likely that he did,—the accident to the particular structure involved was turned manifestly to the advantage of surgery. From his own misfortune his thoughts were directed to the subject of the union of tendons, and it is easily seen from the illustrations in his museum of the reunion of such structures after division, that he laid the foundation of the modern practice of cutting through tendons for the relief of contracted, distorted joints.

In the same year he was made Fellow of the Royal Society, strange to say, before his brother William. He communicated this year to the *Philosophical Transactions* an article on *post mortem* erosion of the stomach, and

explained that this was due to the action of the gastric juice. A vacancy occurred in St. George's Hospital, to which he was appointed in December 9th, 1768, mainly through the influence of his brother, Dr. William Hunter, who had now become a brilliant exponent of medical science, and was very intimate with the most cultured men of his time. This position gave him great prominence, and his practice immediately increased. He was forty years of age before he received an hospital appointment—when it came, public favour came along with it. He now was elected a member of the Corporation of Surgeons, which in 1800 became the Royal College of Surgeons of England, whose members ever since his death have done him so much honour. He was now enabled to take private pupils, each of whom was apprenticed to him for five years, at a fee of five hundred guineas; this included board and lodging. His students were fit, if few. Among them was Jenner, to whose great discovery all the ages are under obligation. With Jenner he carried on a life-long correspondence. In one of his letters he asks, "Have you large trees of different kinds that you can make free with? If you have, I will put you upon a set of experiments with regard to the heat of vegetables." He asks a similar question in regard to bats and hedgehogs. The condition of this latter animal during

Animals in which John Hunter took peculiar interest.

hibernation was a subject of special interest to Hunter, who thus introduces it even in a letter of condolence to Jenner on a disappointment in love. "But let her go, never mind her; I shall employ you with hedgehogs, for I do not know how far I may trust mine." Information was wanted as to the habits of birds, bees, reptiles, and fishes. Indeed, he must have kept Jenner very busy, for nothing short of thorough work answered Hunter's purpose: he took nothing on credit. He at one time seriously thought of establishing a zoological garden, and with this view endeavoured to enlist the services of Dr. Jenner, who, however, was unwilling to join him, and the enterprise was therefore reluctantly abandoned.

His private practice as a surgeon was constantly increasing. He no longer lacked patients, and the rigid economy he had been obliged to exercise in his daily outlays gave way to comparative affluence. In 1770 he settled in Jermyn Street, in the house which his brother William had previously occupied; and in July, 1771, he married Anne, the eldest daughter of Mr. Robert Home, surgeon to Burgoyne's Regiment of Light Horse. Handsome and accomplished, Mrs. Hunter soon became the centre of a radiant circle, and fascinated the *elite* of the Metropolis, no doubt attracted to their home by her distinguished husband. This society was formed of brilliant statesmen,

scientists, artists, and the sparkling wits of a time second only to the Elizabethan period in the literary history of our country. She was a woman of culture, and of a true poetic vein. Several of her lyrics were wedded to immortal music by one of the great masters—Francis Joseph Haydn; of them the song beginning "My mother bids me bind my hair," from the beauty of the accompanying melody, is among the best known.

John Hunter had by this time entered into the great business of his life, namely, the upbuilding of human physiology and pathology, and thereby elucidating the principles of surgery from the sure foundations of natural history and comparative anatomy; and he pursued it with characteristic energy and vigour. As many of the inquiries and experiments he wished to make were impracticable in a town, he purchased a piece of ground at Brompton, called Earl's Court, and there erected a large and commodious house—since famous as his country residence—where he lived from the autumn of 1772 till his death. Here he kept his live animals, whose habits were a constant source of interest to him, and here he pursued most of the researches which he communicated to the Royal Society, and published in his work on the *Animal Economy*. It was at Earl's Court that he entered


JOHN HUNTER


ANNE HUNTER

upon that career which invested his life with so much *éclat*, and established for him that fame which made him one of the most renowned men of his time.

On the spacious grounds now at his command he gathered a large number of animals, birds, fishes, and reptiles, as well as various other objects of natural history; and one of his favourite amusements in the summer and autumn, after the labours of the day were over, was to ramble among these creatures in familiar intercourse, petting and talking to some, and preserving friendly relations with all. Hunter's familiarity with his animals very nearly cost him his life on two occasions. He loved to be among them, to study their habits, and if possible to make them attached to him. He was very fond of a little bull, a present from the Queen. With this animal he had long been on terms of intimacy, when one day, without any assignable cause, while they were engaged in wrestling, the bull became greatly infuriated, and turning violently upon him, would have killed him if he had not been rescued by one who was close by. On another occasion, indicative of Hunter's courage and of his wonderful presence of mind his life was put in imminent jeopardy by two pet leopards, which, escaping from their enclosure, ran about the yard, one chased by the dogs, and the other about to leap over the fence, when Hunter, attracted by the noise of the

neighbours, who were in a great state of consternation, rushed from his study, and, seizing the animals, restored them safely to their kennel. The excitement was so great that when it was over he fainted.

He had beehives in abundance, and watched the bees with intense interest. For fifteen years, he also kept a flock of geese in order that he might have a never-failing supply of eggs for experimental purposes, simply in order to acquaint himself with the development of birds in eggs, with reference to which he remarked that it would almost appear that this mode of propagation was intended for investigation.

The great aim of Hunter's life was to study and to teach physiology as an experimental science and as the only true basis of medicine and surgery. In his investigations he availed himself of every source of information within the range of his comprehensive mind. Every hour he could save was devoted to the study of comparative anatomy, natural history, insect or vegetable life, or morbid anatomy. All were laid under contribution as means of illustrating the principles of the healing art of surgical pathology and practice. "My mind is like a beehive," said Hunter to Abernethy, who wrote, "the simile struck me on account of its correctness, for in the midst of buzz and apparent confusion there was grand order, regularity of structure,

abundant food collected with incessant industry from the choicest stores of knowledge."

He also took especial interest, Holden says, in huge marine animals, and as Aristotle distinguished himself by describing the cartilaginous fishes as a special genus, so Hunter left a magnificent monograph "On the Structure and Economy of Whales." In his anxiety to procure specimens, he sent, at his own expense, a surgeon on a voyage to Greenland, providing him with all necessary requisites for examining and preserving the more interesting parts, and with instructions for making general observations. But his disappointment may be imagined when, to use his own words, he "found that the only returns he received for his expense was a portion of whale's skin with some small animals sticking upon it."

Choosing intuitively the only true method of philosophical discovery, Hunter, ever cautious of confounding fact and hypothesis, besought of Nature the truth through the medium of manifold experiments and observations. "He had never read Bacon," says Babington, "but his mode of studying Nature was as strictly Baconian as if he had." To Jenner, who sometimes conjectured, he writes, "I think your solution is just; but why think? Why not try the experiment? Repeat all the experiments as soon as you receive this and they will give you the solution."

Perhaps no man busily engaged in professional practice has ever conducted so many physiological and pathological investigations in the animal world as Hunter, and yet it was with him an axiom that experiments, which tend merely to establish a principle already known and admitted, should not be too often repeated, but that the next step should be in the application of that principle to useful purposes.

In 1771 he published his work on the *Natural History of the Human Teeth*, and some years afterwards a practical treatise on the *Diseases of the Teeth*. This work merits notice as being the first of any extent treating this subject in a scientific manner. The accuracy of Hunter's observations is apparent throughout, as well as the philosophical mind of its author. The work was translated into Dutch, and published at Dordrecht in 1773. A Latin edition of it was published at Leipsic, 1775.

It is a sign of Hunter's wise caution that he always hesitated to publish his knowledge. He worked for eighteen years before he published anything in his own name. He was so busy in his search for knowledge, and so cautious in his estimate of it, that he always delayed to publish what he knew. He was forty-three when he published his first work, that on the teeth. He began to collect the material for his great work on the *Blood and Inflammation* while he was a student. Some of the ex-

periments recorded in it were made while he was house-surgeon at St. George's. He worked at it for forty years, and began to print it only just before he died. In 1772 he commenced as a lecturer on the theory and practice of surgery, and for two seasons he delivered his lectures gratuitously. He could not be called a successful lecturer. His want of education, indifferent as he seems to have been upon the matter, was here severely felt, and he appeared in distinct contrast with his eloquent brother. Sir Everard Home, his brother-in-law, who was his apprentice, has spoken of his anxiety in the performance of his duties as a lecturer. He says he never gave the first lecture of his course without taking thirty drops of laudanum to take off the effects of his uneasiness. He was so diffident of himself that he trusted nothing to memory, and made me draw up a short abstract of each lecture, which he read on the following evening as a recapitulation to connect the subject in the minds of his students.

Hunter was too anxious to display his own views, which had been repeatedly mis-stated, or ascribed to others: he was too sensible of the advantages to be derived from the practice of teaching to give up lecturing, which was certainly of no consequence from a pecuniary point of view. His class was usually small, but amongst the number who attended were Abernethy, Carlisle, Chevalier,

Cline, Coleman, Astley Cooper, Home, Lynn, and Macartney. Hunter's course, which latterly comprised eighty-six lectures delivered on alternate evenings between the hours of seven and eight, lasted from October to April. He read his lectures, seldom raising his eyes from the manuscript. Without fluency and vivacity, however, a lecturer can rarely be popular, hence John Hunter's lectures were but thinly attended. He probably was content if he could "a fit audience find, though few," and he might indeed have been satisfied could he have anticipated the future glories of his pupils. Let us estimate his lectures, says Arnott, not by a cold analysis, but by their effects. The notes of those lectures which have come down to us do not contain many specimens of his peculiar manner. The account of the treatment of cancer, however, is an example of his strong, unsparing good sense, conveyed with extreme familiarity of style. "No cure has yet been found; for what I call a cure is an alteration of the disposition and the effects of that disposition, and not the destruction of the cancerous parts, which extirpation, however, will often cure as well as we could do by changing the disposition and action. Arsenic seems to have some power of this kind, and its effects might be increased by being used internally and externally, but its use is very dangerous,

and I am afraid insufficient for the disease. This is a remedy which enters into the empirical nostrums which are in vogue for curing cancer, and among which Plunkett's holds the highest rank. But this is no mere discovery, for Sumertees, who lived the Lord knows how long ago, mentions Rodiquez and Sensius, who obtained considerable fame and fortune by such a composition. I was desired to meet Mr. Plunkett to decide on the propriety of using his medicine in a particular case. I have no objection to meet anybody. It was the young one. The old one is dead, and might have died of a cancer for aught I knew. I asked him what he intended to do with his medicine He said, 'To cure the patient.' 'Let me know what you mean by that? Do you mean to alter the diseased state of the parts? or do you mean by your medicine to remove the parts diseased?' 'I mean to destroy them,' he replied. 'Well then, that is nothing more than I or any other surgeon can do with less pain to the patient.'

"Poor Wollett, the engraver, died under one of these cancer curers. He was under my care when this person took him in hand. He had been a lifeguardsman, I think, and had got a never-failing recipe. I continued to call on Wollett as a friend, received great accounts of the good effects; upon which I said, if the man would give me leave to watch the appearance of the cancer, and see my-

self the good effects, and should be satisfied of his curing power on that cancer (mind not by destroying it), I would exert all my power to make him the richest man in the kingdom; but he would have nothing to do with me, and tortured poor Wollett for some time, till at length he died."

Mr. Cline, one of the surgeons of St. Thomas's Hospital, says, in his Hunterian Oration, 1824, "When only twenty-four years of age I had the happiness of hearing the first course of lectures which John Hunter delivered. I had at that time been for some years in the profession, and was tolerably well acquainted with the opinions held by the surgeons most distinguished for their talents, residing in the metropolis; but having heard Mr. Hunter's lectures on the subject of disease, I found them so far superior to everything I had conceived or heard before, that there seemed no comparison between the great mind of the man who delivered them and all the individuals, whether ancient or modern, who had gone before him."

His own and others' errors and fallacies were exposed with equal freedom in his teaching. He would tell his pupils, 'You had better not write down that observation, for very likely I shall think differently next year'; and once to a question he replied, 'Never ask me what I have said, or what I have written; but if you will ask

me what my present opinions are, I will tell you.' He was always much gratified when, in the conversations he encouraged his hearers to hold with him at the end of his lectures, he found that what he said was understood and appreciated. In 1773 he received the first warning of overwork. He was attacked by angina pectoris, and of that fell form of disease he ultimately died. The account given by Home of all he endured during the last twenty years of his life is a record of such distress as would have made an ordinary man utterly idle. He underwent severe bodily pain in the midst of his labours. In 1759 he had pneumonia, and was obliged to leave London. In 1769 and the following three years he had attacks of gout, in 1773 his first attack of angina, in 1776 and 1785 he was again seriously ill, in 1789 he had cerebral disturbances, in 1790 and the following three years there were seven attacks of angina, and during all this time he was in expectation of sudden death in some emotion, so that he used to say that his life was in the hands of any rascal who chose to annoy and tease him. It is not surprising, therefore, that these attacks should have rendered him nervous and irritable—irascible is perhaps not too strong an epithet.

In January, 1776, Hunter was appointed Surgeon-Extraordinary to the king. In this year his health suffered

much, but a residence for some time at Bath served to restore him to comparative health. Nothwithstanding the state of his health—being subject to awful attacks of angina —he continued to struggle that he might benefit science. In 1781 he was chosen a member of the Royal Society of Science and Belles Lettres at Gothenburg, and in 1783 of the Royal Society of Medicine and Academy of Surgery at Paris. In the latter year he purchased a leasehold in Leicester Square, where he erected a building for his museum, lecture-room, etc. He was now one of the first surgeons in London. His practice for many years was large and lucrative, and greatly increased in both these respects after he was appointed Court Surgeon. All accounts go to show that he was most patient and painstaking in the investigation of his cases, and most cautious in the expression of his opinions. If he found himself at a loss in determining the diagnosis, he did not hesitate to acknowledge it, and to ask for further time. He would merely say, "I cannot tell at present what to recommend; I must think of it." With him, as with every honest and conscientious man, every case was a study not to be lightly passed over or treated with heartless indifference. He was always particularly condescending to his poorer patients during consultation hours at his own house. No matter how many "grandees,"

as he called them, might be present, he generally gave precedence to the former, saying they had no time to spare, whereas the others, having nothing to do, could afford to wait. He would sometimes deduct largely from a stipulated fee for an operation if he found that the person had unusual difficulty in raising the money. On one occasion on which the sum agreed upon was twenty guineas, he sent back nineteen, having incidentally learned that the husband of the patient was a very poor but worthy man. Surely such conduct implies the existence of a kind, unselfish heart, and such a heart Hunter naturally possessed, however rough his exterior might at times have seemed to be.

It is finely said by Dr. Beddoes that when one heard that Hunter was at length the first surgeon in London, one felt a satisfaction like that which attends the distribution of poetical justice at the close of a well-told tale. With this sentiment the intellect and the heart must alike agree, the honest and the clear-headed must equally exult in the ultimate success of John Hunter.

With his friend, the celebrated Dr. Fordyce, he instituted a medical society which became distinctly famous, called the Lyceum Medicum Londinense; the meetings were held in his own lecture rooms. Here were accustomed to assemble all who were distinguished for the promotion of

literature, science, or the arts; and here were exhibited all that was rare of the productions of the three kingdoms of Nature introduced into this country. By the familiar interchange of discourse there effected, Hunter acquired much information; for of him it may be said, as of Lord Bacon, that in his conversations he contemned no man's observations, but would light his torch at every man's candle. In 1786 he was appointed deputy Surgeon-General to the Army, and in the same year he published his celebrated work on the venereal disease. About the same time appeared a quarto volume by him, entitled *Observations on Various Parts of the Animal Economy*, consisting of physiological essays, most of which had been inserted in the *Philosophical Transactions*. Having at various times read before the Royal Society many valuable communications, in 1787 he received the Copley Gold Medal. In July of the same year he was chosen a member of the American Philosophical Society. On the death of Mr. Adair in 1789, from whom he received his first commission in the army, he was appointed Inspector-General of Hospitals, and Surgeon-General to the army, and about the same time was admitted a member of the Royal College of Surgeons in Ireland. In 1792 he was elected an honorary member of the Chirurgico-Physical Society of Edinburgh, and became

one of the vice-presidents of the Veterinary College then just projected in London. His labours increased in the same ratio as his honours. Some thought he was mad. Most people would even now regard a scientific man as very strange who at his house close by London should keep wild beasts and have a lion's cave, should have the front of his house adorned with sculptured lions, small pyramids of shells, and a crocodile's head with gaping mouth, and should even drive into London with a pair of buffaloes in harness.

The *Philosophical Transactions* of that period reveal his madness a terrible sanity. He was the first to make known the existence of lymphatic vessels in birds, and of the communication of the air cells in the bones of birds with the air cells of the lungs; to describe the organ of hearing in fishes; to trace the arteries in the gravid uterus with the placenta; to explain the nature of inflammation of the veins; to point out on anatomical and physiological principles the vast chains of sympathy existing between the different organs and structures of the body; and to perform an elaborate series of experiments upon the temperature of different animals, birds, reptiles, insects, trees, and vegetables, upon the blood, and upon man in health and disease. He was the first to interpret correctly the erosion of the stomach by the

action of the gastric juice after death, an effect previously erroneously attributed to pathological conditions. This, however, is encroaching on the next chapter. Professor Gross says, "One is surprised, in contemplating his character, to find how a man who was so incessantly occupied with the duties of a large and laborious practice, and who had in so many various ways so many calls upon his time, could have performed so many prodigies of labour, labour requiring such an enormous pressure upon his mental and physical powers." The mystery is in a manner solved when we remember that he rose regularly at four o'clock in the morning and seldom retired before twelve o'clock at night. The compliment which Cecil paid to Sir Walter Raleigh was equally deserved by Hunter,—"I know he can labour terribly." His mind was incessantly in his work. A regiment of such men would not be long in building a tunnel under the Alps or erecting a bridge over the Atlantic ocean. Abernethy, who knew him well, says, "It is scarcely credible with what patience Mr. Hunter examined the lower kind of animals"; and he quotes Mr. Clift as saying that he would stand for hours motionless as a statue, except that, with a pair of forceps in either hand, he was picking asunder the connecting fibres of some structure he was studying: a very striking picture, for this was in the

last years of Hunter's life; he was growing old, he had lately been very ill, and he knew that he was in instant peril of that sudden death by which at last he fell; he was poor, for all that he could earn, and more, he needed for his collection; and he was overworked in practice and in the duties of Surgeon-General to the army; yet he would stand motionless for hours, patient and watchful as a prophet, as if he were sure that the truth would come, whether in the gradual unveiling of new forms, or in the clearing of some mental cloud, or as in a sudden flash, with which, as in an inspiration, the intellectual darkness becomes light. His latest letters are more than ever full and urgent to his friends to send him everything from which he could gather knowledge—not merely things rare or wonderful, but whatever could be studied, whatever could yield facts for clearing or enlarging his views of life. How keen he grew for facts as he got old may be seen in the following letter:—

"Dear Sir,

"I was favoured with your letter, September 30th, informing me of two birds called the Havannah, being shipped on board the Bull-dog, but unluckily the birds died on the passage home. I consider myself as equally obliged to you for thinking of me and taking so much trouble. I was sorry at the loss of your insects, after all the trouble of collecting them, but I hope you will be more successful in

future. There is one thing I wish very much to have settled in Natural History, which is, the natural history of swallows; they breed with us in the summer and leave us in the winter, and it is what becomes of them in our winter. Now, if they are with you in the winter and if they should breed with you in that season, it would be a proof that they are birds of passage, and upon the same principle you should have more in the winter than in the summer, as there are four or five different species in this country in the summer. I should like to have specimens of those that are with you in the winter. I remember seeing swallows in Portugal in the winter, but I cannot say what species they were. It would hardly be possible to get ostrich eggs just going to hatch, and to crush the shell and put them into proof spirits to preserve them till they came to England. If a foal camel was put into a tub of spirits and sent I should be glad. Is it possible to get a young tame lion, or indeed any other beast or bird? If chameleons were sent it should be in the spring, as then one could feed them on flies through the summer. Are there any cuckoos? We have none in the winter. I want everything respecting the bee tribe, such as wasps with their nests, also hornets with theirs. They are a very large tribe. I would have sent you a paper I wrote on the anatomy of bees, which was published in the *Philosophical Transactions*, but upon inquiry I found that it would cost more than it was worth. I am a subscriber to the African society, but I have not heard of the cachuna things, but as I cannot always attend they may have come without me knowing it. I consider myself very much obliged to you for your attention to me, and I wish I knew how I could return it, which would give me pleasure. I hope you keep your health well.—I am, dear Sir, your much obliged and humble servant,

"JOHN HUNTER."

He has been heard to wish that men would never die. This necessity to feed his thoughts with facts, and to enliven his facts with thoughts, shows itself in his letters, in his lectures, in his essays, and in his museum; and this it was that kept alive that lamp of zeal and industry which never ceased to burn steadily before the altar of science. In October, 1793, the end came. At a meeting of the governors of St. George's Hospital, where he had ardently espoused the cause of two young Scotch students who had misunderstood some new rule, the feeling ran high, and some remarks were made which incensed the great surgeon. Apparently under the influence of strong excitement, Mr. Hunter left the room, and had scarcely entered that adjoining, when he fell dead in the arms of Dr. Robertson, one of the physicians of the hospital, who had followed him. So abruptly, if not quite untimeously, closed that splendid and beneficent career. One is reminded of the warrior's dying speech,—

"Mine be the set of tropic sun,
No pale gradations quench his ray,
No twilight dews his wrath allay,
With disc, like battle-target red
He rushes to his gory bed,
Dyes the clear wave with ruddy light,
Then sinks at once, and all is night."

Perhaps John Hunter desired an end no less sudden. But the word night is inept when we speak of John Hunter's death. The work he did in life, the inestimable fruit of that work he has bequeathed to us, forbids us speaking of his work as night, a season we associate with oblivion to all external influences and objects whatever. The night which followed John Hunter's long, glorious day was as that which like a soft mantle falls upon but does not overshadow the landscape in far northern climes where night is but a lovelier day. Thus in his sixty-fifth year, and in the height of his mental activity, died John Hunter, "whose range of thoughts nature alone could fill," and to whom as to few among all mankind had been given wisdom to interpret the dark sayings of nature. His remains were interred privately in one of the vaults of the church of St. Martin's-in-the-Fields, being followed to the grave by only a few of his medical friends. The *post-mortem* amply confirmed the diagnosis of his friend, Dr. Jenner. Examination of the heart revealed disease involving the pericardium, endocardium, and arteries, the coronary arteries in particular showing ossific change.

John Hunter has had many enthusiastic votaries and followers, but not one of these has more ardently shown his regard for the great master than Frank Buckland, who himself has done so much to add new charms to the

study of natural history. It was in the year 1859 that after a commemorative dinner in honour of John Hunter, Buckland expressed the happy idea of bestowing upon the remains of the great physiologist more honour than had yet been awarded them. They had been resting for sixty years in the vault of the church of St. Martin's-in-the-Fields; but the question was how to find them in the catacombs of the old sanctuary. Buckland had learned that it was the intention of the authorities to reinter the bodies so long confined in these vaults. Surely it was high time. He embraced the opportunity, and began the search on January 26th, 1859, pursuing it amid what he called "awful stink." He removed scores of coffins, and examined them every day for sixteen days; he scrutinized in all *three thousand and sixty* coffins, until at last, when almost in despair, his patient and nauseous work had its reward. When only three were left in the vault he found the coffin of the great John, and may be excused for shrieking with delight at the discovery. It may have been the joyful excitement of the discovery, though much more probably it was the poisonous gases of the vault, but the consequence, however caused, was a severe attack of illness which prostrated Buckland for some time. Beautiful is this incident, as linking together these two great men—the master and the disciple. Too soon for science Frank

Buckland passed away in the vigour of his life. His sun went down when it was still brightest day. "There is not," as has been justly observed by Dean Stanley in his *Historical Memorials of Westminster Abbey*, "a more curious narrative of a chivalrous devotion to the relics of a great man than that displayed in this extraordinary labour of Mr. Buckland, which ended in the triumphant recovery of the remains of the founder of scientific surgery."

The body of John Hunter was re-interred in Westminster Abbey on March 28th, 1859, and so the remains of the mighty surgeon found a fitting resting-place at last.

The coffin when found in St. Martin's-in-the-Fields was in good preservation, and, along with his coat of arms, the brass plate bore this inscription :—

JOHN HUNTER, Esq.,
Died 16th October, 1793,
Aged 64 Years.

The pilgrim to Westminster Abbey, where rest till time shall be no longer many of the world's greatest, will find the grave in the north aisle of the nave, close to the resting-place of Ben Jonson. The brass which covers it bears the following inscription :—

O Lord, how Manifold are Thy Works.

Beneath are deposited the remains of
JOHN HUNTER,
Born at Long Calderwood, Lanarkshire, N.B.,
On the 13th of February, 1728.
Died in London on the 16th of October, 1793.

His remains were removed from the Church of St. Martin's-in-the-Fields to this Abbey on the 28th March, 1859.

The Royal College of Surgeons of England has placed this tablet on the grave of Hunter to record admiration of his genius,
as a gifted interpreter of the Divine power and wisdom at work in the laws of organic life, and its grateful veneration for his services to mankind
as the founder of scientific surgery.

In the words of the poet it may surely be said—

"Ne'er to these mansions where the mighty rest,
Came there a nobler, worthier guest."

CHAPTER VII.

JOHN HUNTER—HIS EXPLOITS IN SCIENCE.

A MEDITATION upon the life, works, and writings of John Hunter leaves the mind imbued with a sense of two all-pervading features, which may be expressed by the words "work" and "thought," or observation and reflection. These two factors, it need scarcely be said, lie at the root of all success in science. It is not, however, the amount, enormous as it is, so much as the well-adjusted balance of these two in Hunter that impresses, and by which we feel his great results were achieved. It has been pronounced that John Hunter was a genius. There is no word in our language, elastic and wonderfully expressive as it is, which is capable of being so variously interpreted as the word genius. It is mere tautology to speak of heaven-born genius. It is a gift as direct from heaven as lightning is an emanation from the cloud. Genius is an irrepressible, innate power that asserts its presence in the world even under the most depressing and retrac-

tive influences. Genius is something in human nature so mysterious that it with difficulty admits of a precise definition. When ordinary powers advance by slow degrees, genius soars on rapid wing. Turner, when asked in what he considered genius to consist, answered, "Hard work." Dr. Johnson's definition of genius is singularly applicable to John Hunter. "The true genius is a mind of large general power accidentally determined in some particular direction." What determines this direction as a rule is enthusiasm. This gives the impulse, for nothing great can be accomplished without that enthusiasm which is enkindled by some dominant idea, to which all else is made subordinate and postponed; and its chief faculties are the reason and imagination. It has, moreover, been well said that, according as one or other of these faculties predominates, science becomes either scientific or artistic. In the former case it seizes at once those hidden affinities which otherwise do not reveal themselves except to the most patient and vigorous application, and, as it were, intuitively recognizing in phenomena the unalterable and eternal, it produces truth; in the latter, seeking to exhibit its own ideal in due and appropriate forms, it realizes the infinite under finite types, and so creates the beautiful. The quality of genius determines beforehand that the man in whom it is found possesses ability superior to that of

others of his race—ability which opens new paths for itself. It is therefore a modification of the common nature. Pertaining to the individual, it must be considered as something innate. But as we cannot have universal genius, we must distinguish: thus Beethoven had genius for music, Burns for poetry, Raphael for painting, Newton for mathematics, Kant for philosophy; so we conclude that the Hunters had genius for anatomy and physiology, and their application to medicine and surgery—in short, for the elucidation of natural laws. The question between genius and industry is not worth discussion in the case of the Hunters. That they had industry no one can dispute—they have left evidence of it unparalleled among surgeons; and undoubtedly they had genius, but it was so tempered, so overspread with the spirit of industry, that there was the just balance, so rarely combined, which gives pre-eminence among mortals, and ranks those gifted men amongst the greatest of human beings. Proof of the variety of genius is not far to seek. Robert Burns was a typical Scotchman. It has been rather pedantically said that the Genius of Poetry found him at the plough and threw her inspiring mantle over him. But, in truth, Burns was no mere machine. If he drank hard he wrought hard physically; and can it be supposed that his writings, multifarious in theme and topic as they are, were compiled without hard work. The

man most like to him in strength of soul is said to have been Hugh Miller, the geologist, who literally hewed his way, mallet and chisel in hand, to immortality.

Sir George Humphry says Hunter was an eminent example of the kind of genius to which has been attributed the privilege of instinctively distinguishing truth from error, or which we may rather say has been masked by that attribute, for it is simply the genius of painstaking—"The transcendent capacity for taking trouble," with its attendant soundness of judgment, the combination of greatness in detail with greatness in summation. He was not a genius in that which is the ordinary, if not the proper acceptation of the term, in the sense that is which implies an unusual aptitude or faculty for certain things, and which is commonly associated with a proportionate inaptitude for some others; but he possessed in a marked degree that combination of sterling qualities which gives sureness and success to effort. The vast collection in the Royal College of Surgeons is an evidence of his genius and his indefatigable industry. To have made such a museum is one of the greatest of human achievements; to have thought carefully over and well upon every specimen in it is far more, it is one of the greatest of human glories. We prize that museum, not merely as a mine of wealth in facts, but even more as

an example and lesson of thought upon facts, and of the relation which one should have to the other. It has been claimed for John that he was of the two brothers the greater genius. It does not quite appear that the sailor who sets sail on an unknown ocean, and loses his reckoning ere his ship is long at sea, is a greater nautical genius than the one who not only knows his own position and whither he is bound, but makes a chart for the brother who has gone out of his course. It is admitted, however, that from this point the pupil bore onwards with marvellous skill. That faculty in any kind of work is sometimes called genius which is mistaken for the real article or particle because of a certain dexterity, and only resembles it as the fencing exercise of the gymnasium resembles the "do or die" earnestness of the battlefield.

John Hunter did not seek for fame by any other means than those which in similar fields of investigation had been employed before him. He knew right well that work was as blood to the body, and he worked for "bare life." Everything he possessed has been won by hard work. In truth, there was little he could have of reward in the passing hour, although it is impossible not to believe that he was consoled by an unwavering assurance of the "All hail!" hereafter. It is impossible even to take notice in

detail of all the vast labours of Hunter as an original investigator. A brief allusion to a few must suffice. The first ten years of his life were spent with his brother in the study of human anatomy, of which he made himself a thorough master, and during that period added many facts to our knowledge of the subject. During his connection with Dr. Hunter's school he, in addition to other labours, solved the problems of the descent of the testis in the fœtus, traced the ramifications of the nasal and olfactory nerves within the nose, experimentally tested the question whether veins could act as absorbents, and studied the formation of pus and the nature of the placental circulation (see fig. 3, p. 92). Anent the priority of discovery in this department of physiology his brother and he quarrelled, a dispute which alienated the two till William was on his deathbed, when John was allowed to assist in the treatment of his case; but John seems never to have been wholly forgiven, for the paternal estate of Long Calderwood was left in his will by William to Dr. Matthew Baillie, his nephew, who with the utmost magnanimity had it conveyed to John Hunter, the natural course the estate should have taken.

Hunter thus spent twelve years in teaching, in other words, in learning human anatomy in his brother's school. In those years he had been an acute observer and most

laborious collector of facts. He then passed finally to comparative anatomy. Human bodies were so difficult to procure for dissection, and the study of them was so rare, that the necessary observations were supplemented from the dissection and investigation of the corresponding organs of the lower animals. The anatomical figure of a man, says Luther Holden, if it existed in the imagination of the physician of those times, was a monster, made up, one may almost venture to say, out of various animals, based upon man, no doubt, and covered with his skin, but patched within with strange parts, one part of a sheep, another of a monkey, another of a dog, and so on. In the present state of knowledge it is difficult to admit that this was better than nothing. Perhaps it was. But it is very like that little knowledge which is a dangerous thing. Mr. Holden in his oration gives a story of the Margrave of Baden Durlach, which illustrates the relations of human and comparative anatomy at that time. The physicians in attendance on this prince disputed among themselves as to the position of his heart in his thorax, one of them contending with Galen that it lay in the middle, the rest being bold enough to affirm that it lay on the left side As this unfortunate doubt assumed the aspect of a serious practical difficulty, when it came to determine the precise spot on which should be applied the plaster

which was destined to relieve the sufferings of the Margrave, it was decided to appeal to nature. A pig was therefore brought into the royal chamber, and opened in the presence of the sick man. The exact position of the heart was shown to him; if in a pig, therefore in a prince. His Highness gave way before this argument, and the plaster was placed accordingly, while the physician who still had the temerity to defend himself by drawing anatomical distinctions between man and pig was dismissed from the court. The new science was founded on the laborious investigation of nature, and firmly established on the basis on which it must ever remain. And the motive which led him to comparative anatomy was not a wish to classify or even to study the animal kingdom for its own sake. He was, above all things, surgeon, then comparative anatomist and physiologist; and it was his longing to found physiology on a sound basis, and to connect pathology with physiology, that led him to his goal. He had had predecessors and teachers in anatomy, but in physiology he planned and struck out a path for himself, and followed it to an intellectual height that has never been attained before or since. For ten years, Fischer of Hanover says, Hunter dissected only human subjects, and then began with animals, for he found that only comparative anatomy could give any satis-

factory solution of the many complicated problems before him. And in his dissections of animals he never lost sight of the proper application of his discoveries to human anatomy, and always sought after general laws. From animals he went to plants, and from plants to crystals. In short, his aim was to unite scientifically all the departments of nature, in order that he might then be able to proceed, in his method, from the simplest up to the most complicated forms. He assumed that nature still maintained her regularity even when she seemed most to depart from it; and that under certain circumstances even the exception to her law is a part of her law. Humphry remarks that he took the whole subject of life within his grasp, and strove to investigate and illustrate, if not to understand it, by phenomena observed and reflected upon in the vegetable and animal world, past and present, in health and disease.

Hunter had no idea of being a mere collector of facts, even in comparative anatomy—he had far higher aims; and on receiving an invitation from Sir John Pringle to collect all his dissections of the turtle and send them to the Royal Society, he stated that the publication of the description of a single animal, more especially of a common one, had never been his wish. Mr. Hunter was not merely in possession of numerous and precise facts in

anatomy; he approximated them, he compared them together, and by his superior genius arranged them in the true order of comparative anatomy—that of organs; for as it has been well observed, if species is the object of comparison in zoology, organ is evidently that in anatomy, each having its peculiar function, its distinct office, its special and determinate laws. Of the successful manner in which Hunter disentangled and unfolded these organs, tracing them from one species of animal to another and exhibiting their modifications, his museum is the faithful record; and his labours in this respect must assuredly be regarded as the first great attempt to arrange in systematic order the detached facts of comparative anatomy.

John Hunter's views extended over the whole empire of nature; he perceived with Seneca that she does not confine her operations to one form, but delights in variety; that she renews one figure out of another, and, not contented with uniformity in procedure, rejoices in undiminished power. The arrangement was not merely according to organ, but to function also; for although the former was the visible manifestation, the latter was the presiding idea. With reference to this, Dr. Arnott says that the quarto manuscript catalogue, the most valuable Hunterian document remaining to the College in his time, derives its chief importance from the information it supplies

respecting the scheme of arrangement, and the general physiological principles intended to be illustrated by the different series of preparations. It was this circumstance which distinguished Hunter from Cuvier, the other most successful cultivator of comparative anatomy in modern times. Hunter studied this important subject with a view to physiology; Cuvier with a view chiefly to zoological classification. Not merely biology, but physiology in its largest sense, then, was the aim and scope of his labours, whether we view him investigating the properties of the seed or of the egg, where life lies sleeping, displaying each form and variety of organization, tracing its developments, observing its aberrations, deducing the laws of life, or applying his knowledge of these laws to the explanation of the phenomena of disease, to the prolongation of the existence, or to the relief of the sufferings of his fellow-creatures.

Mr. Hunter's *Memoirs and Essays on various parts of the Animal Economy* distinctly show the vast range of physiological subjects which his mind grasped, and those who seek to know what his powers of observation, reflection, and investigation were capable of, would do well to read his papers on digestion, animal heat, respiration, and generation, and consult the corresponding parts of the physiological catalogue. John Hunter's con-

summate skill in the experimental investigation of physiological questions cannot be too highly extolled. That famous experiment with the egg, the most brilliant thing done with an egg since the days of Columbus, has set the question of vital heat at rest for ever. "I put an egg," he says, "into a freezing mixture about zero, and froze it and then allowed it to thaw. Through this process I conceive that the preserving power of the egg must be lost, which proved the case. I then put the egg into a freezing mixture at 15°, and with it a new laid one to make the comparison on that which I should call alive, and the difference in the time of freezing was seven and a half minutes, the second one taking so much longer to freeze." This experiment and very many others show Hunter's mode of advancing in knowledge by a scrupulous observation of facts; he gradually ascended from the particular to the general, instead of assuming a principle *a priori*, and bending facts to square with theories. He knew nothing of logic or of the science of thought; he used his natural mental powers as with a natural instinct—used them with all his might but without art or consciousness of method. John Hunter was a seer. "I know no instance," says Sir James Paget, "more signal than was in him of the living force there is in facts when they are stored in a thoughtful mind."

Having satisfied himself about vital heat, he did not allow the fact to lie dormant in his brain, but ere very long reduced it to practice, as the following anecdote will show. He called on his old friend Mr. Nicol—already referred to in this sketch—when his wife was pregnant for the sixth time. Hunter took the opportunity of asking him whether he intended to kill this child, as he had killed all the rest of his children. Mr. Nicol it seems had adopted what is called the hardening system with all the previous ones. Not understanding the question, however, he asked John Hunter what he meant. "Why," said John Hunter, "do you know what is the temperature of a hen with her callow brood? because if you don't, I'll tell you." He then proceeded to explain the necessity of warmth to young animals, and convinced Mr. Nicol of the propriety of changing his plan, which he did, and with complete success.

But, where observation and experiment could not reach, few were bolder in thinking than Hunter was. His long practice in experiments justified him in this by educating him for more distant mental enterprise, from a well devised experiment a mind trained in this kind of exercise may discern a general truth very far in advance of ascertained facts, or even from a standpoint of partial error. As Sir James Paget again says, Hunter could sometimes,

with striking force and expression, think the truth. Writing on the development of the chick, he enunciates that great and marvellous law in development, that every higher animal in its progress from the embryo to the complete form, passes through a series of changes, in each of which it resembles the complete form of some order lower than itself. And this discovery was not a lucky guess just made and then left. He saw nearly all its importance. It became a fruitful doctrine, guiding or confirming him in the assurance which determined a large portion of his studies, that in the whole range of physiology every lower form of life should be studied for the simpler and the elemental instances of the functions performed in the higher.

He exercised an unusual prudence in all the work of observation, yet he was very fond of scientific enterprise and speculation. He held a curious theory which has about it an air of antiquity, and carries us back to the days of Hippocrates, when scientific nebulae were no doubt to a great extent afloat. This was the idea of a certain *materia vitae diffusa.* And the term was by Hunter employed to express the power, or, as he supposed, "the subtle matter," which he believed to be contained in the blood and all the tissues, and to govern all the tissues of the living body—the sole agent,

in fact, in the phenomena of life. This theory, *quantum valeat*, by no means affected Hunter's labours, which very certainly were never of a very nebulous kind at any time; and it is very easy to forgive the scientific explorer if he be sometimes tempted to broach a theory which perhaps exercises the minds of his fellow-students for a little, and after affording them some healthful or amusing excitement, is discarded, like the worn-out football after the day's play is ended.

There is unquestionably no subject so difficult as that of life in the whole range of physiological inquiry—its essence exceeds the power of human investigation—its effects and its properties are sufficiently obvious to our senses; but beyond this knowledge we can proceed but little, or rather not at all. Hunter's opinions on this subject carry us a very short distance in the inquiry beyond that of assembling together the phenomena of life. In contradiction to organization being a cause, we find in general that the least organized are the most tenacious of life. Different animals with the same organization are very different with respect to their being easy or difficult to be killed by the stoppages of those operations that continue life. For instance, an eel will live out of water for many days, whilst a mackerel dies instantaneously. A carp will live many weeks out of

water if kept in a moist place. These differences only respect respiration, which, however, is essential to life, although not so much so in some animals as in others. A very great difference will take place in the same organization with respect to food. A sparrow or a linnet will soon die if not regularly supplied with food; whilst an eagle, a hawk, or a swallow, will live a long time without a supply. The food indeed is different, but the construction of the two animals is exactly the same, and therefore depends upon some peculiarity in the principle of life. This vital principle he, however, conceived to exist throughout the body, and to be connected with that matter which principally composes the brain. His words are—"I consider that something similar to the materials of the brain is diffused through the body, and even contained in the blood, between which and the brain a communication is kept up by the nerves." He evidently regarded life as something distinct from organized structure, yet always connected with it. This view of life is not in accord with the present theory of scientists—*omnis cellula e cellula.* The subject gave rise to bitter controversy in John Hunter's time, and some eminent men even now seem to think that there is a recoil in favour of his ideas. Mere composition of matter, he remarked, does not give life, for the dead body has all the com-

position it ever had. Life is a property we do not understand, we can only see the necessary steps leading to it; as from life only, said he, in one of his lectures, we can gain an idea of death, so from death only we can gain an idea of life. This connection is apparent in all the actions of life, and the influence exerted by them on the intellectual operations is abundantly manifest. What Hunter calls a "vital principle," or *materia vita*, was not material, or a mere property of matter. Observing that in the advanced stages of successful incubation, eggs did not putrefy, he was first led to recognize life as a power and organization—as the mechanism by which life operates.

Joseph Henry Green, of all the interpreters of the master, best defines life as 'a power anterior in the order of thought to the organization which it animates, sustains, and repairs; a power originative and constructive.' "But," says Paget, "Hunter could not clearly express this, and I believe he could not clearly think it. For it cannot be denied that on this and some allied subjects he wrote very obscurely. Hunter's defect in this respect may have been due in part to his neglect of early education, but chiefly it was natural. In many other things he corrected all the faults that could be referred to neglected education; in language, whether in speaking or writing, he was

to the last deficient. Nevertheless, however incomplete his thoughts on the vital principle may have been, he worked well with it as an hypothesis. With its help he threw off the fetters of the erroneous chemical and physical doctrines which just before his time were prevalent in physiology. It led him to larger and clearer views of the work to which he gave himself; it was as a single band holding together all the objects of his study. Moreover, some of his pupils made the doctrine of a vital principle the chief ground of his reputation; and the discussion of it served usefully in time of need to keep alive his reputation and the praise of his great example."

The doctrine of the vitality of the blood appears to have been a subject of great interest to Hunter, and so desirous was he to establish his convictions with regard to it by mature investigations, that he had not published them at the time of his death. "Hunter," says the most enlightened historian of his discoveries and labours, Professor Owen, "carries a series of calm and philosophical investigations on the vital properties of the blood to an extent which has never been surpassed; he examines it under every condition, both in the vessels and out of the vessels, during circulation and at rest, in health and in disease. He aims to establish the period in its formation at which it manifests the vital properties; and he fully

details the changes which it undergoes, and the phenomena which supervene in the rest of the organism when these properties are lost. Lastly, he tells us how the blood, by means of its vital properties, assists in the restoration of parts when injured or diseased."

Hunter stands well that severe test of the strength of a scientific mind, the test of resistance against subjection to its own hypotheses. The feebler men worship the work of their own minds, they fall down before idols made of wood, they feel more sure of what they call their principles than of plain facts. It was not so with Hunter. He may have admired the hypothesis of a vital principle —and he used it wisely—but he much more admired the observation and right use of facts. He collected them as with an avarice; he kept them pure in memory and manuscript, and compared, arranged, and read in them as he could the laws of life. Herein was the principal, the best, the most abiding of his works; hence was his great influence in science. Great work was done by Hunter in physiology, but not greater than in pathology. It was a great mission of Hunter's to found pathology on comparative physiology, to rescue disease from the grasp of quacks, and to restore it to the rank where Sydenham would have placed it—beside the beneficent regulations of nature which govern the body in health. "And," says

Luther Holden, "he must read history amiss who does not set the highest value on such work." Hunter's great idea was to raise surgery into a science. He saw that it was necessary for a surgeon to have a comprehensive knowledge of physiology and pathology—in other words, the laws of life in health and the laws of life in disease. Still he felt that the laws of nature in health must be first understood, by these we should be led up to the laws of disease. To ascertain the laws of nature in health Hunter's researches were not confined to man. He covered the whole range of the animal kingdom—step by step—from the most intricate down to the most lowly organized creatures. But he did not stop here; he went into the vegetable world and investigated it in a like manner. Nor did he stop in the vegetable world—he even studied the common inanimate matter of the globe—for, he says, "the better to understand animal matter it is necessary to understand the properties of common matter in order to see how far these properties are introduced into the vegetable and animal operations. In their decay both animals and vegetables go through a series of regular spontaneous changes, until the whole returns to common matter from whence they arose, for to the earth they must go from whence they came."

Thus Hunter's range of thought and work carried him

into inorganic science, where he clearly saw the foundation of all organic science must be laid. With this view he examined the structure of crystals, of which he had a valuable collection, both of regular and irregular forms, which he was accustomed to use in his lectures to exemplify the difference between the laws of growth of organic bodies and the increase of inorganic bodies. His idea was that irregular crystals were pathological crystals. Hunter had a great mission in pathology. Of the laws of pathology he was constantly in search. To discover them was his high aim. He knew that the discovery would raise surgery to a science. His observations led him to the conclusion that the laws of pathology were identical with the laws of physiology; and that the best way to get a knowledge of human pathology was to survey the whole of nature as he had done. As an instance, he showed his class an oak leaf which he had picked up in his garden. On this leaf were several excrescences which are called oak-galls. These he found to be the results of irritation, occasioned by a small insect, the excrescences being the organized exudation following inflammation. Hunter showed that the comfortable condition which we call health was the result of observing certain rules of life, and that the undesirable condition called disease was the result of the neglect or infringement of those laws. In this way he

laid the foundation of those great advances which are now going on so rapidly—those, namely, which elucidate the laws of hygiene, and tend to prevent the generation and the spread of disease.

The great aim of Hunter's life was to study and to teach physiology as the only true basis of medicine and surgery. In his investigations he availed himself of every source of information within the range of his comprehensive mind. Comparative anatomy, natural history, insect and vegetable life, morbid anatomy,—all were laid under contribution as means of illustrating the principles of the healing art or of surgical pathology and practice. Gross of Philadelphia says, "Hunter, as might be supposed, was endowed with great reasoning powers, and it may boldly be asserted that there was no man in his day in any part of the world who was capable of taking a deeper or more philosophical view of any subject that engrossed his attention than he. He had an unconquerable love for work, and a passion for original investigation, which outweighed all minor considerations, the fascination of wealth, the pleasure of society, and the temporary plaudits of his fellow-citizens. To these qualities, so essential to success in any great pursuit, he added remarkable powers of generalizing, an indomitable will, an ardent and unfaltering enthusiasm, and an indefatigable

industry, which knew no break or chasm, and which no obstacle could check or abate." To his anatomical labours Mr. Hunter added close and constant observation of disease and experimental researches on most parts of the animal economy, both in the healthy and diseased state. These apparently multifarious labours were combined into one general result—a body of physiological doctrine applicable to the elucidation and treatment of disease. The improvement of surgical science and practice was the object of all Hunter's labours. Here we see the enthusiasm kindled and kept alive by a single grand pursuit; the workings of a great mind raised to the highest pitch of power by the concentration of effort on one object, and that of the most noble and elevating character, pursued with untiring energy for nearly half a century.

On Hunter's scientific surgery his great renown must rest. But few have known as he did the danger of reasoning from physiology solely into practical surgery. He wrote—"The man who judges from general principles only shows ignorance; few things are so simple as to come wholly within a general principle. We should never reason on general principles only, much less practise upon them, when we are or can be master of all the facts; but when we have nothing else but the general principle, then we must take it for our guide." It is a singular fact that

1. Double Spur growing on Cockscomb.

2. Single Spur growing on Cockscomb, much elongated.

Hunter foreshadowed the principles which now guide the surgeon in the treatment of club-foot and analogous distortions. As has been noticed he ruptured his tendo Achillis in 1767, a circumstance which led him to institute a series of experiments upon the reunion of divided tendons in the dog, by severing the tendons subcutaneously. The animals were killed at different periods, when it was ascertained that the union had been effected in a manner similar to that of a simple fracture. His own tendo Achillis, as was found after death, had been united by ossific matter.

His treatise on the *Diseases of the Teeth* will long remain one of the evidences of the philosophical mind of its author. It was, he says in this work, in the waste of the dental alveoli and of the fangs of shedding teeth, that he received his first hint of the use of the absorbents. Hunter, on being asked how he could suppose it possible for absorbents to do such things as he attributed to them, replied, "Nay, I know not, unless they possess powers similar to those which a caterpillar exerts when feeding on a leaf." Hunter had made many transplantations from one part of an animal to another, and as a climax, he had succeeded in transplanting a human tooth into a cockscomb, in which it held firm and acquired union by blood-vessels. He could be sure

then that teeth had the vital principle. And as a scientific fact this was so sure that it was some time before Hunter could see that the transplanting of teeth was impracticable. The whole story of the practice as told in his work on the Teeth, and his very fair comments on it, are instructive illustrations of his scientific faith in facts and of his matchless perseverance. Dr. Adams has said, "I would advise every medical student to read the whole of the book in the order in which it stands. He will find it the best introduction to pathological reasoning that his closet can afford him." The treatise on the *Venereal Disease* he was most anxious to produce in as perfect a form as possible. It was printed in his own house, and 1000 copies were sold independent of the booksellers. Mr. Hunter lent his powerful aid to the explanation of the morbid condition in inflammation of the internal coats of the veins. A minute attention to the structure of the intestines enabled him to describe with great precision the condition of parts in an introsusception. He gives an account of the mode of administering food and medicines through a tube introduced into the stomach, a practice now of daily occurrence, but not attempted in the human subject before the time of John Hunter. And so the benefits Hunter conferred on surgery might be recounted *ad infinitum*.

The loftiest efforts, however, of this great man are to be found in his work on *The Blood, Inflammation, and Gunshot Wounds.* The mode of investigation in this masterpiece, the application of physiology to practice, suffices to distinguish him from all preceding writers, and may be considered as the basis of modern pathology. Its influence is felt, not merely in surgery, but in medicine, for its principles are catholic. "Up to the time of Hunter," says Arnott, "surgeons were content to take their general view of the nature of disease from the physicians. He emancipated them from their trammels, and established a body of doctrine so sound that it has wholly superseded the airy theories of medicine previously current. Nay, it seems to have stifled similar phantasmata in their birth, for since the days of Cullen and Brown, no new 'system' of physic has obtained the slightest vogue in England." It has been already said that Hunter based his surgery upon physiology, and his physiology upon human and comparative anatomy. What can more strikingly illustrate this than his greatest improvement in practical surgery?—the abolition of amputation for popliteal aneurism, and the practice of tying the artery in a sound part at a distance from the seat of the disease. It was probably without any idea of surgery that Hunter was first led to investigate the phenomena of the annual

growth and shedding of the antlers of the stag or buck. He possessed the privilege of making experiments on the deer in Richmond Park. He was known to be humane and intent on conferring benefits on the human species as well as on science; therefore the lord of the manor acted wisely in granting him this privilege without let or hindrance, and the result has proved the wisdom of allowing such liberty, for infinite blessing has been conferred upon humanity by the experiments. Hunter, in July of 1785, had a buck there caught and thrown, and tied one of its external carotids, which supplies the growing antler and the soft covering called the velvet in which the vessels convey the material of growth. He observed that the pulsations in the vessels of the velvet ceased, and that the antler which received its blood supply therefrom then half grown became cold to the touch. Hunter debated with himself whether it would be shed in due time, or be retained longer than usual. To his surprise on re-examining the antler a week or two later, when the wound was healed, it had regained its warmth and was still increasing in size. Had then his operation in some way been defective? To determine this question the buck was killed and sent to Leicester Fields. On examination Hunter found that the external carotid had been duly tied, that the tied artery had been obliterated, but the circulation was

carried on by vessels above and below the ligature, generally very small, but which under the new conditions, had become enlarged, and by their anastomoses had restored the blood supply of the growing part. Thus it was evident that under the "stimulus of necessity," to use a phrase of the experimenter, the small arterial channels are capable of rapid increase in dimensions to perform the offices of the larger ones. Sir Spencer Wells says—"I am well aware that some modern misanthropical zoophilists have said that Hunter had no right to make this experiment, that human morbid anatomy had taught him that when the current of blood ceased to flow into the aneurismal sac the blood was absorbed; but it is quite indisputable that Hunter was doubtful whether after the supply of blood to a part had been cut off by obliterating the main arterial trunk, the circulation would be kept up by other vessels, or the part would die, and it is certain that the experiment on the deer removed his doubts." For—as Professor Owen tells—there was a coachman in St. George's Hospital with popliteal aneurism, who had consented to amputation. The disease must soon prove fatal unless by some means arrested. Should the surgeons following the usual, commonly fatal method of treatment, cut down upon the tumour, and after tying the artery above and below it, evacuate its contents? or

should he adopt the procedure, deemed by Pott generally advisable, of amputating the limb above it? It was Hunter's aim in his practice, even if he could not dispense with the necessity, at least to diminish the severity of operations, which he considered were an acknowledgment of the imperfection of the art of healing, and compared them to the arts of the armed savage, who attempts to get that by force which a civilized man would get by stratagem. So Hunter argued that if the anastomosing vessels in the man would carry on the circulation after obliteration of the femoral artery, as they did in the antler of the buck after obliteration of the carotid, he would cure the aneurism and save the limb. Professor Owen emphatically says that Hunter explained to his assistants and pupils the results which he believed would follow a repetition on the man of his experiment on the deer, and just as he predicted, there was the same stopping of pulsation, the same cooling of the part from which the supply of blood was cut off, the same return of natural warmth, and in six weeks the man walked away cured. This operation was not perfected at once. In this and two subsequent cases artery and vein were both tied, but in his fourth case Hunter tied the artery only, not the vein. This was in the year 1787. The patient was then thirty-seven years old. He lived till he

was eighty-six, and died in 1837. At his death the limb was procured for the museum by Mr. Wormald, the femoral vein was found pervious, the artery obliterated, the tortuous anastomosing vessels well seen, and the aneurism represented by the small calcareous body not larger than a filbert. Thus it was that Hunter inaugurated an operation which has been the means of preserving very many lives with integrity of limb—an operation, which, as the Italian Assalini who saw it performed testifies, excited the greatest wonder and awakened the attention of all the surgeons of Europe. This operation has already saved thousands of human lives; and it has been well said, that if Hunter had done nothing else he would have a right to be classed among the principal benefactors of mankind. Sir James Paget, a worthy successor of Hunter, says it was really a splendid achievement; and its utility is not half told by counting the thousands of lives that it has saved. Its higher value is that it still abides as a great testimony to the power of the scientific mind in surgery. I think it has done more than any other of Hunter's works to make surgery scientific; and observe how comparative anatomy and physiology led to surgery—how thought and experiments prepared the way for action.

The Hunterian operation was the beginning of the study

of the most important section of the "Surgery of Arteries," the most intensely interesting department of all surgery. It introduced a method of operating in which all the finest qualities of the surgeon find their best exercise. All these splendid results may be ascribed to Hunter's careful study and his reliance upon facts. Mr. Wormald, who presented the specimen of the limb to the museum containing the proof of John Hunter's great success in tying the artery at some distance from the disease, where the artery would be found in a healthy condition, observed long ago that Hunter was well aware of the possibility of curing aneurism by pressure on the artery as well as by tying it—in this, as in so many other instances, anticipating recent improvements in practice supposed to be new. Just as we find that modern views of phlebitis and pyaemia had been advanced by Hunter; and Burdon Sanderson, in his lectures on "Inflammation," acknowledges that we find ourselves once more coming back to the notions which at one time were thought obsolete, of the great father and founder of physiological pathology;—"So we may be certain," says Sir Spencer Wells, "that Hunter foresaw much of that progress in abdominal surgery in which it has been my own pride and pleasure to assist." To form an idea of the infinite variety of subjects Hunter's mind could grasp, it is of the utmost importance that his *Essays and Observations*,

edited by Owen, be read. It is quite marvellous how constantly he is on the alert. For instance, from observing some snails drowning, and noticing the effects produced upon lizards if they were disturbed in winter whilst hibernating, he ascertained some of the facts which guide and encourage us in our attempts to restore suspended animation. Here we see the man who both observes and thinks. "For one person," says Buckle, "who can think, there are at least a hundred who can observe; an accurate observer is no doubt rare, but an accurate thinker is far rarer."

Hunter's surgical writings teem with the results of patient research, carefully conducted experiment, and inductive reasoning. His aims as an author were of the highest order; he took nothing for granted, nothing on credit, but subjected everything to the closest scrutiny and to the most searching analysis before he made it his own. He was too proud to borrow knowledge from others, too independent to rely on their labours. Second-hand knowledge he despised; hence we seldom find any reference in his published works to the writings of his predecessors or of his contemporaries. Everything that came from his pen was stamped with the seal of originality. His originality is conspicuous in surgery, which he entirely revolutionized. It was the boast of Augustus that he found Rome built

of brick and left it built of marble. Hunter found surgery a mere mechanical art, hardly emancipated from its connection with the occupation of the barber; he left it a beautiful science, equal to any in attractive interest, and inferior to none in its capability of alleviating human suffering. Not only surgery, but every department of medicine, has felt the vivifying influence of the physiological principles emanating from his bold and inventive genius. Lawrence says that we could well spare the works of any surgeon except Hunter; they would hardly be missed. But if his researches and his writings were obliterated, and their influence withdrawn, the very life-blood of surgery would be lost, it would be a body from which the vital principle had departed.

CHAPTER VIII.

JOHN HUNTER—HIS MUSEUM.

THE mind of John Hunter was so entirely engrossed by the pursuit of knowledge that he was almost a stranger to the desires and cares which actuate ordinary persons. He was indifferent to wealth, except as a means of aiding his favourite pursuits on which he expended all that he could get. Hence he died poor, leaving his family comparatively unprovided for, except in the glorious inheritance of a name that will never perish, and in that matchless collection which is his greatest achievement and the clearest evidence of his genius and his labours. He directed by his will that his museum should be offered to the British Government on reasonable terms; in case of their refusing, that it should be sold in one lot to some foreign power, or otherwise disposed of as his executors might direct. So imperfectly was this creation of genius appreciated at that time, that the offer to the Government was received very coldly, and six years

elapsed before it was finally accepted. Happily, through the sound judgment of his executors, and the enthusiasm of an apprentice boy, William Clift, the precious relics were held together until purchased as a whole by the Government, and finally placed under the care of the College of Surgeons, seven years after the death of John Hunter. The state of political affairs may account for this in some degree. When it was mentioned to Mr. Pitt, then Prime Minister, he said, "What, buy preparations? I have no money to buy gunpowder!" We may excuse this answer from the great statesman, whose whole soul was engaged in the mighty task of rousing and maintaining the spirit of his countrymen, and wielding the energies of Britain in her tremendous struggle for life or death with a powerful and inveterate foe. Thus the collection may be said to have gone a-begging, and little wonder when his brother William's was refused as a gift.

Legally, and naturally, when Hunter died, his museum, manuscripts, and his other possessions came into Sir Everard Home's charge. With sorrow be it said, Home betrayed his trust; after appropriating some of the manuscripts for his own use he then burned them all. His plea that Hunter desired him to destroy them is quite incredible; they were the very materials with which Hunter had hoped to complete the labour of his life, and if he had wished them destroyed,

Home would not have kept them for thirty years. But, says Sir James Paget, there is a glow of light over this dark story. William Clift, a Cornish lad of seventeen, with a natural taste for drawing, came to live with Hunter, twenty months before his death, and in exchange for the privileges of apprenticeship was to write and make drawings, to dissect, and take part in the charge of the museum. Hunter never hesitated to press into his service any one who might be useful to him, and the surest avenue to his heart was some specimen of anatomy or natural history. At Hunter's death, in poverty, Clift alone remained in personal charge of the museum, and all the papers and drawings connected with it. For six years he watched them, "living," as he says, "upon seven shillings a week, at a time when the quartern loaf was, for a short period, two shillings, and only helped occasionally with some spirit to repair the waste in the preparation bottles." But his love for Hunter seems to have gathered strength in contemplation of the grandeur of his work, and his sense of duty gathered strength in the consciousness of sole responsibility. For duty and for love the Hunterian manuscripts were his constant study. He had no other books to read at that time, and he copied volumes of them, and thus saved a great part of all that Home intended utterly to destroy. "Neither Owen

nor I," says Sir James Paget, "will ever forget the evident happiness with which Clift watched the progress of the catalogues, in which he saw the labours of his hard early life used, as he believed, as Hunter would have wished. He lived to see them finished, and to see the museum which, as the first conservator, he cherished for fifty years, transmitted to the care of his distinguished successor and son-in-law, Professor Quekett; he saw it enriched, enlarged, and worthily displayed and illustrated."

The museum was rejected by the College of Physicians; it was declined by the President of the Royal Society on the part of that learned body and of the British Museum; when, as Lawrence has well said, it was joyfully accepted by the Corporation of Surgeons, this was a happy stroke, for next year the Corporation obtained a new charter from the Crown, and the title of the Royal College of Surgeons of England, with the power to examine students for the diploma of membership, which brings in annually a large sum for the increase and support of the museum and of the college. The Corporation was well worthy to receive a royal title, for to its members the public is probably indebted for having retained in the country an intellectual treasure, created by the genius of one of her most gifted sons. Notwithstanding that Hunter had the best practice in London for many years, it is

not surprising that he should have died poor, when we know the vast sums of money he lavished upon the purchase of objects of natural history and pathological specimens of every kind for enhancing the value of his museum. Doubtless Hunter must have been the only man who ever paid £500 for a human skeleton. A huge fellow well known in London, nearly eight feet in height, had a great horror of being dissected by John Hunter. O'Brien, the giant, exhibited himself, and thereby made money, but, well knowing Hunter's predilection for acquiring bodies of abnormal growth, the giant took means to deprive John of the pleasure of revelling in his bones. He directed in his last will and testament that £200 be paid to certain fishermen, to take his dead body out to sea and drop it in mid-ocean. John, suddenly missing his long friend, instituted inquiries as to his whereabouts, found that he was dead, and learned also of the arrangement entered into as to the disposal of his corpse. Hunter, without delay, got hold of the fishermen and said to them, "Well! I have no wish to deprive you of the £200. Go you to sea and drop the body according to the will, but pull it up again and bring it to me and I will give you £500. This was done, and now the skeleton of the Irish giant towers high above all the others in the museum,

"Keeping watch o'er man's mortality." Men have given thousands for single pictures or objects of art, but who, excepting John Hunter, enthusiast above all other anatomists, ever paid £500 for a human skeleton? There are other versions of the story, but this one was communicated by the present able physiologist and most courteous curator, Professor Charles Stewart.

John Hunter's executors sold the museum to the Government for £15,000. It cost £70,000. The trustees held it for six years, but Mrs. Hunter's claims were pressing, and it had to be disposed of. Before its purchase many eminent medical and scientific men were examined as to its value and importance from a national point of view. The Government, having secured the museum, did not think lightly of the purchase, but were quite alive to the value of the collection as a nursery for the study of biology in its widest sense. The highest officers of the Crown, with some most distinguished public men, were appointed its Board of Trustees. In accepting this magnificent gift, the College of Surgeons have ever been sensible of the responsibility they incurred, not only to the British Parliament in reference to the mere terms and conditions of the donation, but to the entire medical profession, and to men of science in all countries—to all interested in the great subjects of organization and life, and in the progress of the healing art, of

which these are the foundation. It has been their constant aim to administer the affairs of the museum in the spirit of its great founder; to enlarge the collection in all its departments, keeping it on a level with the progress of advancing knowledge, and thus rendering it a national repository, worthy of the country which gave birth to its author. This grand possession may be said to be the property of the surgical profession and the public of England. It is freely open under reasonable regulations to all comers of all quality; and an enthusiast might say with truth that it is the heart and soul of British surgery.

To form anything like a correct idea of the extent of the Hunterian Museum, and of the work that is done by the Royal College of Surgeons for its increase and preservation, it is absolutely necessary to visit, and to spend, not days, but weeks, and even months, in the examination of its vast riches. The collection in its present form is a vast storehouse of specimens of anatomy, human and comparative, histology, physiology, morbid structure, plants and fossils, of which nearly 14,000 were originally supplied from the Hunterian collection at the time of its purchase by the Government. The specimens are all classified in the order of their affinities, and are in the most perfect state of preservation, notwithstanding that many of them are upwards of one hundred years old.

Let us glance now for a moment at the marvellous task Hunter set for himself in the formation of this great collection. The museum he formed consisted at the time of his death of upwards of ten thousand preparations. His object in beginning this collection was the stupendous one of illustrating, as far as possible, the whole subject of life, by preparations of the bodies in which its phenomena are presented. The most valuable part of the great collection is the physiological series, consisting of the dissections of the organs of plants and animals, these being classed according to their different vital functions, and in each class arranged so as to present every variety of form, beginning with the most simple and passing upwards to the most complex. They were disposed in two main divisions; the first illustrating the functions which minister to our personal necessities, and the second of those which provide for the continuance of the species. The first division commenced with a few examples of the component parts of organic substances, as sap, blood, etc.; next exhibiting the organs of support and motion, presenting as at a glance a most interesting view of the various materials necessary to the various classes of beings. This was succeeded by serial illustrations of the stomach and functions of digestion, which, we are told, Hunter placed first, because he regarded it as the organ specially

characteristic of animals; but other functions similarly illustrated were those of circulation and nutrition. Then followed illustrations of the organs which place each being in relation to the surrounding world, as the nervous system, the organs of sense, the integumentary coverings. The other chief division of the physiological part of the collection contained the sexual organs of plants and animals in their barren, as well as their impregnated condition; preparations illustrating the gradual development of the young and of the organs temporarily subservient to their use, both before and after birth. But, besides all this, were collections of nearly a thousand skeletons, of objects illustrative of natural history, consisting of animals and plants either stuffed or preserved in spirits. Of these he left nearly 3000; of rare fossils and creatures of monstrous birth there were some 1200.

But the story of Hunter's wonderful work is only half told. The pathologcal part of the museum contained some 2500 specimens, and these were arranged in three principal departments; the first illustrating the processes of common diseases; the second, the effects of specific diseases; the third, the effects of various diseases, arranged according to their locality in the body. Appended to these was a collection of about 700 calculi and other inorganic concretions. This brief sketch may give some

idea of Hunter's prodigious labour and industry. His museum contains sufficient proof that he was no mere collector. It was formed with a most admirable design, and arranged in a most philosophical manner; and when it is remembered that it is all the work of one man, labouring under every disadvantage of deficient education, and of limited, often embarrassed, pecuniary resources, it affords, perhaps, better evidence of the strength and originality of Hunter's mind than any of his written works, where he speaks of the facts, which in his museum are made to speak for themselves. Nor should it be omitted that the manual dexterity exhibited in displaying the various objects is fully equal to the intellectual power which determined their arrangement. Unhappily for all time, the full fruits of his mighty work do but partially survive. He died when he had completed but a small part of the design he had conceived for his own commemoration, though he left materials for a work which would undoubtedly have been the most valuable and interesting of its kind ever published—a work which, as Professor Flower says, "needed but the finishing touches to have made it one of the greatest, most durable, and valuable contributions ever made by any one man to the advancement of the science of comparative anatomy."

And so after all that has been said, it is quite true that this great man is but a Torso, a glorious figure, as we judge of what remains of him in his written works and in his museum, which he so sedulously furnished during so many years. That is a monument, but it is a perishable one. His fame rests on a firmer basis than on his museum, unique and invaluable as it is. The qualified student of the contents of that museum cannot long examine these without being convinced that John Hunter had been well aware of facts of which other observers have since his death claimed and received the honour due to him. To him Cuvier no doubt owed his knowledge of fossil bones, a subject surely abstruse enough, for such an investigation might be made the clue to the history of the earlier world. Can there be a more convincing homage to the justice of Hunter's method than the fact that the great naturalist pursued exactly the same path in laying the foundations of that philosophical arrangement which he has brought so near to perfection in his work on the animal kingdom? Much of the ground which Cuvier went over for this purpose had been already trodden by John Hunter.

Hunter's notices of monstrosities have proved his knowledge of the fact accepted by Geoffroy St. Hilaire. His ideas of the formation of monsters, a subject, says Gross,

which at one time engaged much of his attention, were far in advance of those of his age, and strikingly in harmony with the peculiarities of his reasoning powers and his method of study. Prior to his investigations no attempts had been made to explain the formation of this class of beings upon physiological, philosophical, or scientific principles. Most writers regarded them as the offspring of chance, as freaks of nature, as proofs of the divine wrath, or as effects of disease of fœtal life. Hunter, from a careful survey of the subject, founded upon the dissection of different classes of animals, concluded that these beings are simply so many deviations from the established order of nature, dependent upon an arrest of development in one case, and upon an excess of development in another, and that the cause in all exists in the primordial cell, in perverted nutrition, or in a disturbance of the ordinary laws of formative action, a fact now universally admitted by teratologists. In framing this theory he did not confine himself to the investigation of animal matter, but derived important illustrations from the study of vegetable life, and even of crystals. Indeed, he seldom, in the investigation of any subject that concerned the phenomena of life, whether in health or in disease, limited himself to the animal kingdom. His capacious mind took a higher view of things, and embraced every variety and form of organic structure.

From drawings made by Mr. Hunter from his own preparations, it is certain he was well acquainted with the whole or nearly the whole of that still obscure but ever most interesting department of physiology which relates to the development of the embryo. The destruction of his manuscripts is a deed of atrocity, the full meaning of which we cannot estimate. Mr. Hunter thereby lost the honour which must have been ever his, of recording, on this vastly interesting and important subject, carefully collected facts which would have proved of enormous value as the basis of inductions that cannot yet be made for want of substratal material. Mr. Hunter made a large collection of fossil organic remains, from which circumstance it is clear that his sagacious mind had not failed to appreciate the important bearing of these often mutilated and apparently worthless fragments on various questions in general anatomy and the history of the globe. These vestiges of a former world throw light on the laws of organization, and particularly on the great question of uniformity of type, and are therefore necessary in a collection of general anatomy. A flood of light has since been thrown on this subject by the combined labours of many inquirers. The Council of the Royal College of Surgeons were bound to form a catalogue of the vast collection. This they could have done so as fully to satisfy the condition of the parlia-

mentary grant without much trouble or expense. To their honour be it said, that, putting aside all considerations of that kind, they determined at once that the treasures confided to their care should be described in a manner worthy of the founder and of the college. This was an arduous undertaking, requiring the employment of efficient scientific men, and extending over many years. The college, however, regarded it as a sacred duty to the memory and character of Mr. Hunter, whose services in the cause of science, although appreciated by a chosen few, were but imperfectly understood at the time of his death, even in his own country, and hardly known at all beyond the limits of England. He had published but little during his life. Incessantly engaged in new researches calculated to extend the boundaries of science, he intended to publish, at some future time, a great work that should embody all his labours, anatomical, physiological, pathological, and practical. Intent too, like other collectors, on adding to his store, he had deferred to a future occasion the serious and less agreeable task of description. Thus there was no catalogue of the collection at the time of his death. The physiological series in the galleries of the great museum presents the result of Mr. Hunter's anatomical and physiological labours, and an epitome of his doctrines, while it exhibits a great portion of the anatomical facts on which a

natural arrangement of animals must be founded. To draw up, not a mere list of these preparations, but such an account of them as should exhibit the powerful light they throw on the great subjects of general anatomy and physiology, as well as on zoology,—such, in short, as should do full justice to the genius and industry of the author, required a rare combination of endowments, a knowledge of general anatomy not inferior to that of the founder, a perfect acquaintance with natural history, a full comprehension of the Hunterian views and doctrines, with the power, so to speak, of identification with Hunter, that is, of seeing objects as they appeared to him. The College was fortunate to a marvellous extent in finding men amongst themselves, members of their own corporation, who were endowed and possessed of the qualifications necessary for such a task. The first conservator was Mr. Clift, to whom we have already referred, a man of indomitable perseverance, and who did the work *con amore* for the pure love of his master, John Hunter, and whom he defended on all hands from those who condemn what they do not understand. His catalogue is of the osteology, a quarto volume, in which great pains have been taken in determining the species, and in giving the synonyms.

Then came Sir Richard Owen, recently gone from amongst us at an advanced age. Upon him the mantle of the great

Cuvier seemed to have fallen, and he wore it worthily and well. For nearly thirty years he laboured at the elucidation of the Hunterian Museum. The physiological catalogue is contained in five quarto volumes, and represents the labours of Sir Richard for eight years. The determination of the species, without which the scientific character of the catalogue would have been much lessened, involved long and laborious investigations, for a large number of the specimens required to be identified in this respect. Sir Richard states, in the preface to the first volume, that he had then dissected more than 200 animals in reference to this object alone.

The catalogue is illustrated by engravings from the collection of highly finished and beautiful drawings left by the founder. They were executed by Mr. Bell, an artist who resided with Mr. Hunter for that purpose for many years, and are interesting, not only for their intrinsic merits, but as showing that the indefatigable author of the collection had far surpassed all his contemporaries, and had anticipated many of the most important discoveries of his successors. We cannot doubt that the catalogue, in its present form, says Lawrence, is nearly such as Mr. Hunter would have made it, while its accomplished author has brought it into harmony with the existing state of science, without sacrificing the character of originality stamped on all the

works of Hunter. In some respects it is more instructive than it could have been if formed during the life of the founder. The College have added innumerable specimens, and many are introduced into the catalogue, so that it is quite abreast of the time. Mr. Hunter, too, could not have spared time for the minute description of individual specimens, nor for the collection of the various illustrative matter introduced by Sir Richard Owen.

If the Royal College of Surgeons have been successful in such an eminent degree with their physiological catalogue, they have been no less so with the other departments. Sir James Paget, of whom we are still so justly proud, and whose Hunterian oration is a gem in its way, had charge of the Hunterian pathological specimens. This department, which to many of the profession will be the most interesting portion of the collection, has received numerous and most important additions during late years. Hence it is fortunate that the formation of a full and illustrative catalogue has been deferred to the present time. The three quarto volumes of the pathological catalogue, in conjunction with the collection they intended to illustrate, contain a more valuable body of information in pathology than can be found elsewhere. Mr. Taylor, one of the Fellows of the College, acted with Sir James Paget and did admirable service with chemical analysis in calculi

and concretions. Besides these gentlemen, many others in connection with the College have performed feats of labour in elucidating John Hunter's museum. We mention further, Professors Quekett, Flower, Bell Pettigrew, and the present curator, Professor Charles Stewart. As has been well said, the members of the College cannot but feel an honest pride in reflecting that their exposition of this great assemblage of scientific materials intended to establish the principles of the healing art, the work of a humble but a mighty Scotchman, together with the elaborate and instructive catalogues in which they are described, are entirely owing to the labours of English surgeons. Lord Bacon said in his will—"My name and memory I leave to foreign nations, and to mine own countrymen after some time be passed over."

This was the case with John Hunter. Many of his contemporaries could not even comprehend why he should spend his time in the dissection of animals and in physiological experiments; they could not see how the researches of comparative anatomy and the making of preparations, could contribute to the improvement of surgery. The admiration of posterity makes up in these cases for the indifference and the sneers of contemporaries. Thus the reputation of Mr. Hunter has been constantly increasing since the time of his death. Indeed,

the vigour and originality of his genius, and his comprehension and depth of thought, could not be appreciated until the contents of his museum were well understood, and until it was rendered generally useful by proper arrangement and by good catalogues.

Without doubt it is by this work, above all others, that Hunter has immortalized his name. In his writings we occasionally find an obscurity in the expression of his thoughts, a want of logical accuracy in his reasonings, and an incorrectness in his language, resulting from a deficient education. In this work no such failures are apparent; nature is here made to be her own expositor, and the treasures she has poured forth come fresh to the mind from the fountains of knowledge, unimpaired by passing through the imperfect medium of language, and unimpeachably proclaiming the genius of him by whose labours they were brought to light. That Hunter should have left this work incomplete after so many years devoted to its construction, will not surprise those who reflect that the stores of nature are in truth inexhaustible. He has raised a noble edifice, the magnitude and beauty of which all must admire who consider that it was the work of one mind; but there is still ample room for the labours of others in adding to or completing its various parts; and those to whose care this invaluable collection

has been committed could not have better forwarded the interests of science than by devoting, as they have done, some of the ample funds at their disposal to judiciously increasing its treasures, and to making those treasures more extensively useful by publications such as those by which they are now illustrating them. The surgical profession in England has now reason to boast of possessing one of the noblest scientific institutions which the world can exhibit.

CHAPTER IX.

THE PORTRAITS OF THE BROTHERS.

We have always the desire as we make ourselves acquainted, as far as by the aid of the biographer we can do so, with the intellectual doings of an illustrious person, to form or obtain somehow a mental portrait of him as he lived and went on his daily round of life, the while he was most industriously and for us most usefully building up his fame. We desire, when the life-work of such an one is over, to know how he looked in the flesh while he was about his work, and what form of clay at one time encased the spirit emancipated long ago, but still living and actively moving among men to this present day. Fortunately for posterity, the society of the brothers Hunter was courted by the most cultivated men of their time in London, by no one more so than by Sir Joshua Reynolds, the first President of the Royal Academy. Sir Joshua Reynolds had a wider circle of friends eminent by rank or talents than any contemporary. This painter

possessed above all others the power of portraying the mind of his sitter. William Hunter was Professor of Anatomy to the Royal Academy, and often the worthy President listened with rapture to the prelections of one who was not only a thorough master of his subject, but who fascinated with his eloquence all who heard him. The President enjoyed the most familiar intercourse with the brothers, and was therefore well qualified to limn their features, taking each man in his finest mood. William Hunter shone as a lecturer, and from Sir Joshua's portrait of him (see p. 22) we take the idea of a man of flashing intelligence; and the singularly bright eye beneath a brow finely arched, which seems to indicate a large faculty of perceptiveness, is in harmony with the rest of the features, the mouth being specially delicate and fine. The hands outstretched, and resting easily on the lecturing desk, admirably express the easy gracefulness of a speaker perfectly at home with his subject and his audience, while fully enjoying his work. The large glass jar on the table beside him contains a beautiful preparation often used as an illustration in his lectures. It is still in the museum, and is in fine preservation.

The other portrait (see p. 26) given of William Hunter is by Robert Edge Pine, a famous colourist, who represents him as the shrewd, thoughtful, polished physician, meditating on

the great work which is to usher in for humanity the dawn of a brighter day. Doubtless it was a comparatively easy task to depict William Hunter, as he had himself well in hand by dint of judicious training and self-denial; he proved a capital sitter, and thereby materially assisted the artist. But it was far otherwise with John Hunter. Sir Joshua could not prevail upon him to grant sittings, in fact he would never have induced John to sit at all had it not been for their mutual friend, William Sharp, the engraver. Sharp was exceedingly anxious to get John Hunter to sit to Sir Joshua, that he might engrave the portrait, and never let the great surgeon rest till he agreed to do so. The engraver seemed to be possessed with the idea that there was that character in Hunter's head and face which would be a fortune to him if he could only have it engraved. In the end, however, John submitted to the ordeal, but with no good grace; in truth he never forgave Sir Joshua the annoyance the sittings gave him, for when some of Hunter's friends wished him to go to the great painter's funeral he wished them all to the devil. Sir Joshua certainly did his part well, and deserves the thanks of posterity; he has left us a noble impression of the man (see p. 120).

The task was not an easy one for the artist, and had he not been endowed with great patience, he could not

have accomplished it. He was almost despairing of satisfying himself with the likeness, when, one day John Hunter became so absorbed in thought that nothing could discompose him. Sir Joshua, observing this, quietly turned his canvas upside down and painted the head where the legs were, without saying a word, thereby catching the great physiologist in his most natural and common attitude of deep thoughtfulness. Patience was eminently rewarded, and the result is a portrait of world-wide renown. The great surgeon looking upward, resting his head on his left hand, fell into a profound reverie—one of those waking dreams which, in his lectures, he has so well described when the body loses the consciousness of its own existence. "In that masterpiece of portraiture," says Sir James Paget, "which teaches like a chapter of biography, Hunter is not shown as the busy anatomist or experimenter, pursuing objective facts; the chief record of his work is in the background; he is at rest and looking out, but as one who is looking far beyond and away from things visible into a world of truth and law which can only be intellectually discerned. The clear vision of that world was his reward. It may be the reward of all who will live the scientific life with the same devotion and simplicity."

The volumes seen in Sir Joshua's picture are a portion

of the unpublished records of anatomical researches left by Hunter at his death, which, with other manuscripts —literally a cart-load—his brother-in-law, in 1812, removed from his museum, and eventually, in order, it has been supposed, to keep secret the source of many of his papers in the *Philosophical Transactions*, and of facts mentioned in his lectures, committed to the flames. William Sharp has given us from this portrait, now hanging in the council room of the Royal College of Surgeons, one of the finest engravings of portraiture which has ever been executed, and which has certainly conferred immortality on the engraver. Lavater said, on looking at this engraving of John Hunter,—"That man thinks for himself." It is said, that until the production of this plate, Sir Joshua Reynolds was sceptical as to the power of line engraving to give the masses for which his works are so distinguished, and which had induced him to prefer mezzotinto and stippled engravings. Mr. Sharp convinced him of his error. The half tints and shadows of Sharp's best works are peculiarly rich. His lines are always conducted with ability and sometimes with that

"Wanton heed and giddy cunning,"

which can result only from genius. Sharp has adorned his art with many fine works, but these two engravings

are especially worthy of notice—"John Hunter" and the "Doctors of the Church." The former is one of the finest portraits, the latter one of the finest historical engravings which the art has produced.

Who was this extraordinary man who had such influence over such men as John Hunter and Sir Joshua Reynolds, commanding the one as it were to sit for his portrait, and compelling the other to yield to him an important point in regard to art? William Sharp was a great friend of John Hunter's; he often sat at his table, was fond of good cheer, grew corpulent from indulging in it, and had the gout. The physiologist was matter of fact to the backbone: the engraver was a visionary, pure, simple, and unadulterated, but withal exceedingly clever. Though an Epicurean, he had implicit faith in mystical characters; he believed in the divine mission of the madman Richard Brothers, in the immaculate conception of Johanna Southcote, and engraved their portraits. The latter is a fine piece of work. In the former the writing engraver was too much for the engraver of the portrait. Sharp had written below the portrait of Brothers, "Fully believing this to be the man appointed by God, I engrave his likeness. W. Sharp." The writing engraver put the comma after the word appointed, and omitted it where it ought to have been. This was not discovered till

several impressions had been taken, when it was rectified. The first impressions are, however, in far greater demand. Now if the transposition of this comma was not the work of John Hunter in one of his rollicking moods, it certainly looks very like it.

The second portrait of John Hunter (see p. 122) is a delicate reproduction by Mr. James Annan of a head modelled in clay by Mr. Tweed, a young Glasgow sculptor, now studying in Paris. It was taken by the sculptor from a pencil drawing, in the Royal College of Surgeons, by Sir Nathaniel Holland, drawn from the life in the year of Hunter's death, 1793. This portrait faithfully represents the great physiologist in the last year of his life, his face furrowed not only by age and constant thought, but by the painful physical affection of which he died.

CHAPTER X.

THE INFLUENCE OF THE HUNTERS.

THERE is no want of testimony to the influence the Hunters exerted, not only on the medical profession but also upon science in general. "Few are the individuals indeed," says Dr. Thomson, the biographer of Dr. Cullen, "of whom it can justly be said that their labour, their example, and their actual service, have conferred so great a benefit upon science, and tended in a degree so remarkable to improve and facilitate the means of communicating the correct knowledge of the facts of anatomy, and the principles of physiology and pathology, as William Hunter and John Hunter. It may, without exaggeration, be said that both England and Scotland owe to William Hunter and his brother John Hunter, a debt which has never yet been repaid, and which is probably too great to be repaid. Both were, in the most true sense of that term, benefactors of the human race. Both laboured, not only without public encouragement, but in the face

of the greatest difficulties and the most chilling and discouraging inattention, in teaching anatomy and physiology, and the best principles of pathology, upon a foundation solid and durable; and both devoted in the most disinterested manner the pecuniary means which the exercise of their profession supplied, not in procuring expensive luxuries, not in acquiring large estates and erecting magnificent mansions, but in providing subsequent generations the means of anatomical instruction upon the same solid foundation on which they had already taught, and the superior advantages of which they had proved by their own example."

In estimating the public services of such men as the brothers Hunter, we are not to regard merely the direct accessions to knowledge which have resulted from their individual labours; we must consider the influence exerted over the minds of those around them, and the effect of their writings and example in stimulating others to enter the new and delightful paths of science, which they have laid open to their view. Hence, new eras in the progress of intellect are dated from the lives and labours of such men. When William Hunter settled in London, medicine, and especially medical education, was in a wretchedly imperfect condition. It must be very difficult to estimate what we owe to him directly and

indirectly, through the instruction of assistants, the direction of their labours, and the communication to them of his own enlightened enthusiasm. Among his followers or scientific descendants in the Windmill Street School which he founded, were Matthew Baillie, James Wilson, Sir Benjamin Brodie, Sir Charles Bell, and Herbert Mayo. It is interesting to note how the influence of William Hunter was extended, to see how the work of broadening and deepening the science of anatomy by the discovery of facts hitherto unexplored, was accomplished. He tells us himself of three very remarkable men he trained and guided under his eye, and brought up in his own house. "Mr. John Hunter, whom I bred to practical anatomy, and who worked for me and attended my dissecting room and read some lectures for me for some years." On the same principle, says Sir Benjamin Brodie, on which Ulysses is made to lay claim to part of the glory belonging to the achievements of Achilles, William Hunter deserves to be honoured on account of those of his brother John,—

"Ergo opera illius mea sunt."

He brought to London the uncouth Scotch lad who afterwards became one of the greatest philosophers in this country, but who otherwise might have remained to be a

farmer in his native county of Lanark. It was as his pupil that John Hunter pursued his earliest studies in his profession; and it was under the influence of his example that he learned to cultivate as a science what was before little more than a practical art and trade. After the mention of his remarkable brother, John, he tells us of Mr. Hewson and Mr. Cruickshank, both very able men, whom he took into his own house and treated in the same way, superintending their studies and directing their work.

The attention of anatomists was at this time, 1751, directed to the elucidation of the most obscure and least explored parts of the human frame, more especially the lymphatics. His discoveries regarding the lymphatic system, its distribution and uses, William Hunter believed to be the greatest, "both in physiology and in pathology, that anatomy has suggested since the discovery of the circulation." He investigated their arrangement and proposed the doctrine that they are absorbents. As this doctrine required the existence of this order of vessels, not only in quadrupeds and birds, but in reptiles and fishes, William Hunter set his assistants to confirm the doctrine. John Hunter, who undertook to demonstrate the truth of this hypothesis by experiment, discovered, in 1758, lymphatics in the neck in birds. William Hewson

gave to the Royal Society in 1768 an account of the lacteals and lymphatics in birds, fishes, and reptiles, as he had discovered and demonstrated them. Mr. Hewson, some years later, gave the first complete account of the anatomical peculiarities of the lymphatic system in man and other animals. John Sheldon, another pupil of Hunter's, gave a second history and description of the lymphatics, which, though divested of the charm of novelty, contains many interesting anatomical facts. Lastly, Mr. Cruickshank, to whom, in conjunction with Dr. Baillie, Dr. Hunter left his museum, published a valuable history of the anatomy of the lymphatic system, in which he maintained the accuracy of the Hunterian doctrine, that the lymphatics are the only absorbents; and gave a more minute account of these vessels, of their coats and valves, and explained the structure of the lymphatic glands. Dr. Hunter also deserves credit for what his distinguished nephew was able to accomplish.

Dr. Matthew Baillie was educated at Glasgow University, where he distinguished himself. Thence, having gained a Snell Exhibition, he repaired, in 1779, to Balliol College, Oxford. During the vacation he resided in London with his uncle, who had indeed adopted him as a son, and by whose advice Baillie had embraced the medical profession; for it was said he would have preferred the Church or

the Bar. He was much engaged in making anatomical preparations for the lectures, and was employed also in conducting the demonstrations and in overlooking the dissections of the students. Upon the death of Dr. Hunter in 1783, Baillie succeeded to the lectures along with Mr. Cruickshank, and gave his first course in 1784-5. As a teacher, he, like his distinguished uncle, succeeded in the highest degree—his demonstrations being remarkable for their clearness and precision. Abstruse and difficult points under his hands became most simple and intelligible—he possessed a perfect conception of his subject, and imparted knowledge with the utmost plainness and perspicuity to his hearers. He was appointed physician to the King, and a baronetcy was offered him; but this he had the prudence to decline, not being ambitious of such distinction. His success in practice arose from his celebrity as an anatomical teacher and his great acquaintance with his profession. Dr. Baillie was the author of *Morbid Anatomy* and *Illustrations of Morbid Anatomy*, illustrated by a series of splendid engravings, creditable at once to his own taste and to the taste of the arts in this country at that time. He was modest and unpretending; in his preface to this work he expresses his regret that "the knowledge of morbid structure does not lead with certainty to the knowledge

of morbid actions, although the one is the effect of the other; yet surely it lays the most solid foundation for prosecuting such inquiries with success." His labours have been correctly estimated by an able writer in the *Edinburgh Medical Journal.* In speaking of works on pathological anatomy, this writer characterizes those of Voigtel, Portal, and Baillie, in the following manner:— "The German is tediously minute, exact, and prolix; the Frenchman is luminous, copious, and verbose; the Englishman (*i.e.* the Scotsman) is simple, short, perspicuous, and useful. Not a word is said more than is necessary, and that word is always exactly to the point." Dr. Matthew Baillie seems to have been particularly happy with his uncle, and enjoyed his society to the utmost. Wardrop, Baillie's friend and biographer, speaking of the happy relationship, says that William Hunter, who at this time was somewhat advanced in years, was a shrewd observer of mankind, and his long intercourse with the world had furnished him with many recollections and observations. Hunter had a peculiarly happy talent for relating anecdote, and with such expression of countenance and voice that it was supposed he might have acquired on the stage the highest rank as a comedian. To hear him tell stories and indulge those humours by the fireside, which was a common custom

when alone with his nephew, was delightful to the youth who, on the following morning, had the advantage of receiving instruction from one of the most distinguished philosophers of the age.

"Now if," says Luther Holden, the famous anatomist, "I contend that William Hunter was, in a measure, to England what Vesalius and the other great men who established the study of anatomy were to Europe—if I say this, I need only point to the results of his school to prove my assertion. And not only did he establish the study of anatomy in England, but he was fully aware of the importance of the task which he set himself. It was the main object of his life to found a school in England which would make our country independent of European schools and this object he achieved with singular success." Dr. Hunter's great object in his school in Windmill Street was to secure for medicine proper teachers. He feared science would not be followed for her own sake. He says "anatomy will be taught only by young men as an introduction to business, the name of lecturer in newspapers and in private conversation never failing to give a man some degree of credit. But such young teachers will generally be very indifferently qualified when they begin, and when they have acquired some ability from experience, that is, when they are just become fit

for teaching, they will generally leave it off. They will always find their labour better rewarded (in the vulgar sense of reward) by following the practice of physic or surgery than by reading lectures." Dr. Matthews Duncan observes that these just views as to the paramount importance of science and of teaching deserve more attention than is given them, and require to be inculcated on the profession of our day quite as much as in William Hunter's time. Were we to judge by their conduct the teachers in some of our greatest schools, we should think practice and money-making the noblest objects of ambition, for we find it almost the invariable custom to give up the pursuit of science and the occupation of teaching as soon as the scent of fees becomes strong. A little devotion to science to get a good position as teacher; a good position as teacher to have introduction to practice; when practice begins to be lucrative then adieu to science and to teaching also. Such was not the ambitious climax of William Hunter. His influence still lives in the power of his great example. By teaching us when we are not to interfere with the ordinary course of events, he has contributed more towards the advancement of the healing art than all the inventors of remedies who had gone before him. We must acknowledge his devotion to science, and his self-sacrifice. He lived, in fact, not for himself, not for his friends, but for

his race all the world over—for his race then and thereafter. He who could work, with an intellect such as he possessed, for thirty long years at one point, never leaving the subject so long as doubts remained and fresh evidence was attainable, must of necessity exert a powerful influence on succeeding generations. With the exception of Kepler, and his brother John Hunter, there is hardly in history a man to be found whose perseverance was more steady or whose industry was more severe. Many circumstances seemed, as it were, to combine together, deriving efficiency from Dr. Hunter's zeal, so as to render the time in which he flourished a most important epoch for surgery in England. "And should his fame," says Chevalier, "either now or hereafter be equalled or surpassed, we must still recollect, that the star which heralds the approach of the morning is not less to be admired because it is the harbinger of a better and more perfect light, in which its own will be lost."

Wide-spread as was the power by which William Hunter held sway over men of science by reason of his giant intellect and vast labours, still the influence of the brothers has been increased and rendered truly marvellous by the work of the younger brother, John Hunter. His genius was free and untrammelled. His transcendent powers were devoted to the noblest and most inexhaustible of all

subjects, the study of life and its manifestations; hence the river of influence streaming from this Hunterian source has broadened and deepened till its life-giving energy is felt to the ends of the earth. It has been well said of John Hunter's power, "that it was not only by individual discoveries but by the general tone of scientific investigation which he gave to surgical practice that he improved it. Before his time surgery had been little more than a mechanical art, somewhat dignified by the material on which it was employed. Hunter first made it a science; and by pointing out its peculiar excellence as affording visible examples of the effects and progress of disease, induced men of far higher attainments than those who had before practised it to make it their study." With the exception of Hippocrates, the father of medicine, John Hunter is the grandest figure in his profession. All intelligent readers of biography are more or less familiar with his labours and writings, his marvellous genius, and his vast contributions to science. In the medical profession his name is, and always will be, a household word. It is spoken with respect and reverence in every surgical amphitheatre, and is deeply engraved upon the mind of every student of surgery. He was emphatically the Newton of the medical profession. "He was," says Professor Gross, "not only a great surgeon, a wise physician, and a great

anatomist and physiologist, both human and comparative, but above all he was a philosopher, whose mental grasp embraced the whole range of nature's works, from the most humble structure to the most complex and lofty. Hunter is peerless in the history of British surgery; and after the lapse of nearly a century the profession turns to his memory with increased reverence for his transcendent genius, his matchless ability, and his unqualified services. To say that he was simply the founder of scientific surgery would fall far short of his deserts; to do him full justice we must add that he was the father also of scientific zoology and of comparative physiology." Surgery in England at the commencement of Hunter's career was at the lowest possible ebb, sterile, and strongly scented with the odour of the barber's shop. Cimmerian darkness, as it were, had enveloped the surgical profession; William in *his* lectures was the first to illumine the darkness, and he became so engaged with his own great work of obstetrical anatomy, that he could merely open the gate to the wide domain of surgery and other branches of science. Fortunate it was for him and for the world that he had a brother possessed of such splendid genius and tremendous energy, ready to enter and cultivate the varied and fertile field. Insensibility, as of death, pervaded the medical profession; the Hunters touched her seeming corpse, and

Phœnix-like, she rose in nobler and grander form. John began to work for himself on the excellent basis of his brother's labours. "I love to think" was one of his common sayings, and he might with equal truth have added, "I love to work." In all his inquiries into all the laws of animal and vegetable life, and in all his investigations of healthy and morbid structure, his great aim was the establishment of principles founded upon facts deduced from laborious and carefully conducted experiments and observations.

The lesson of the life of such a man as we have seen John Hunter to have been, so powerful in intellect, and so indissolubly associated with the scientific history of his age and country, is full of instruction, not only to the members of our own profession, but to men in every avenue and pursuit of life. His example of industry and of steady, persistent effort in the cause of human progress reflects the highest credit upon his character, and is worthy of the imitation of every student ambitious of distinction and usefulness. Nowhere, either in ancient or modern times, can there be found a nobler pattern of a truly scientific career.

John Hunter possessed the same power as his brother William of attracting able men to assist him in his work and aid in disseminating his doctrines. What a long

bright roll is displayed, as the names of his pupils and those who felt his influence are unfolded: Edward Jenner, John Abernethy, Henry Cline, Philip Syng Physic, Sir Astley Cooper, John Thomson, Sir Everard Home, Sir Anthony Carlisle; and many foreigners drank deep, perhaps deeper, of the spring open to all—such renowned men as Camper, Poli, Scarpa, and Blumenbach. Sir Richard Owen thus descants on the grand work done by those men, inspired as they were by the example of John Hunter:—"We cannot but suppose that the spectacle of the organization of so many rare marine animals beautifully displayed by so consummate a practical anatomist as Hunter, must have had a lasting influence on the mind of Poli; and it is not, perhaps, assuming too much to trace to this source the taste for anatomy and the stimulus to the indefatigable and minute dissections of the Mediterranean mollusca, and the magnificent illustrations of their organization, which have justly immortalized their author. In contemplating the gradational and connected series of the organs of animals, which the now venerable Blumenbach must have witnessed for the first time in the museum of Hunter, that learned and accomplished physiologist was doubtless led vividly to appreciate the cumulative force with which comparative anatomy urges the onward progress of physiological science when

all its scattered facts are concentrated into one orderly system. In his subsequent publications of the first systematic treatise of comparative anatomy the erudition of Blumenbach supplied many of those links in the series of animal structures which Hunter derived from nature's original sources. In estimating, therefore, the share which Hunter had in advancing comparative anatomy and physiology, his annual demonstrations of his collection to such individuals as we have instanced must not be overlooked. We may admit that while so vast a proportion of the stores of his experience lay buried in unpublished manuscripts, his true station in the temple of science could hardly be discerned; but, independently of these manuscripts, we cannot hesitate in allowing that his published works, full of profound and original views, combined with the spectacle of his wonderful dissections, must have effected more than had been done by any previous author towards raising the science of comparative anatomy in the scale of human knowledge."

Hunter's work has been wonderfully appreciated everywhere on the Continent. Professor Billroth says, "Hunter is one of the greatest men the English nation has produced, who, by his work on *Inflammation and Gunshot Wounds*, laid the corner-stone of modern English and German surgery." And this famous surgeon elsewhere

writes, "From the time of Hunter to the present day, English surgery has about it something noble. In the scientific, as well as in the practical part of surgery, and of medicine generally, England is now more advanced than any other country." The originality of Hunter's views occasioned not a little surprise in the French schools of medicine. When the complete translation of Hunter's work first came out in Paris, M. Royer-Collard spoke of it as a great scientific event, and congratulated his countrymen on being able to study at leisure one of the most beautiful monuments raised in modern times by the genius of science.

Hunter's disciples, fortunately for the progress of surgery, were able to develop some of his favourite ideas with more fulness and precision than their teacher himself, and strove to instil into their scholars the doctrines and practice of their great instructor. Those men were proud of their master; they regarded him with profound respect and reverence, and accepted his teachings as a kind of revelation from heaven. The pupils whose names are recorded form a cluster of renowned men upon whose shoulders the mantle of the prophet worthily rested, and who in their turn transmitted it unstained to their successors, and played a conspicuous part in disseminating Hunter's doctrines. The glory of the master is often eclipsed by

the reputation of the pupil; but in this instance, illustrious as many of the disciples became, the glory of the master is only rendered more brilliant and enduring. In no period of the history of Great Britain has the medical profession made such rapid strides as during the period which has elapsed since the death of the brothers Hunter, or been illustrated by the labours of so many learned and accomplished men. The science of medicine has advanced since the age of the Hunters—that is, during the century which has closed—more than in the eighteen hundred years which preceded it. The heritage which was left by the brothers William and John Hunter has been rich and abundant, the salutary effects of which will be felt in all future ages.

APPENDIX.

NOTE ON THE ANCIENT ARMS OF THE HUNTERS OF HUNTERSTON.

Taken from Paterson's "History of the Counties of Ayr and Wigton." Vol. III. (Cuninghame), Part II., Page 332.

"These consist of two Abbots' crosiers in Saltire, with a stringed hunting horn below the heads of the crosiers on each side, and what appears to have been overlooked, possibly from the decaying surface of the stone, one also in base. It also displays a rose in the chief middle point, and a mason's mallet, *Scottice*, 'mell,' on the base point of the shield; a device for the name of Melrose; his initials (A. H.) are on the shield, one on each side below the hunting horns, and two draped figures of angels, and not mermaids, as they have been described, carry the shield between them, supporting it with their hands on each side, the raised wings of the angels being distinctly seen running back on the sides of the sculpture, and something like the remains of a crown is placed under the point of the shield, thus supporting it on the buttress below.

"This Abbot Andrew Hunter was confessor to James II., and filled many important offices from 1448 to 1460. He held the office of Lord High Treasurer of Scotland from 1449 till 1453."

THE PUBLISHED WORKS AND PAPERS OF WILLIAM HUNTER.

Extract from a Paper on the "Life of William Hunter"—The Harveian Address —13th April, 1876. *By J. Matthews Duncan, M.D.* ["*Edinburgh Medical Journal*," 1876. *Vol. XXI., Part II.*].

William Hunter contributed to the Transactions of the Royal Society, and to the "Medical Observations and Inquiries" at least twenty papers, of which the following is a list, for the compilation of which I am indebted to Dr. Underhill :—

1743. On the Structure and Diseases of the Articulating Cartilages. (Philosoph. Trans., vol. xlii., p. 514.)

1756. The History of an Aneurysm of the Aorta, with some Remarks on Aneurysms in General. (Medical Observations and Inquiries, by a Society of Physicians in London, vol. i., p. 323.)

1757. The History of an Emphysema. (*Ibid.*, vol. ii., p. 17.)

1757. Remarks on the Cellular Membrane and some of its Diseases. (*Ibid.*, vol. ii., p. 26.)

1761. An Account of a Diseased Tibia. (*Ibid.*, vol. ii., p. 303.)

1761. Remarks on the Symphysis of the Ossa Pubis. (*Ibid.*, vol. ii., p. 333.)

1761. Further Observations on a particular Species of Aneurysms. (*Ibid.*, vol. ii., p. 390.)

1768. Observations on the Bones, commonly supposed to be Elephants' Bones, which have been found near the River Ohio, in America. (Philosoph. Trans., vol. lviii., p. 54.)

1770. Remarks on some Bones found in the Rock of Gibraltar, in a Letter to Dr. Maty, Sec. Roy. Soc. (*Ibid.*, vol. lx., p. 414.)

1770. Introduction to a Paper on the Insensibility of Tendons, by Mr. John Teckel, surgeon. (Medical Observations, etc., vol. iv., p. 343.)

1770. Postscript to an Account of a Varicose Aneurysm, by Mr. Thomas Armiger. (*Ibid.*, vol. iv., p. 385.)

1770. Appendix to a History of a Fatal Retroversio of the Uterus and Rupture of the Bladder in Pregnancy. (*Ibid.*, vol. iv., p. 400.)

1771. An Account of the Nyl-Ghau, an Indian Animal not hitherto described. (Phil. Trans., vol. lxi., p. 170.)

1774 (or '5). Essay on the Origin of the Venereal Disease. (Read at Roy. Soc. Never published. See Life by Simmons.)

1776. Summary Remarks on the Retroverted Uterus. (Medical Observations, etc., vol. v., p. 388.)

1777. A Short Account of Dr. Maty's Illness, and the Appearances in the Dead Body, which was examined on 3rd July, 1776, the day after his decease, by Dr. Hunter and Mr. Henry Watson. (Phil. Trans., vol. lxvii., p. 608.)

1778. Reflections on the Section of the Symphysis Pubis. (Read before Roy. Coll. of Physicians, and then published. See Life by Simmons.)

1780. Letter to Royal Society in Answer to John Hunter, claiming the Discovery of the Anatomy of the Placenta. (Unpublished. See Life by Simmons.)

1783. On the Uncertainty of the Signs of Murder in the Case of Bastard Children. (Posthumous. Medical Observations, vol. vi., p. 266.)

1783. Three Cases of Malconformation of the Heart. (Posthumous. Medical Observations, vol. vi., p. 291.)

1783. The Successful Cure of a Severe Disorder of the Stomach by Milk taken in small quantities at once. (Medical Observations, vol. vi., p. 310.)

Besides these papers he published a volume, and subsequent supplement, of "Medical Commentaries." . . . . The greatest of his works is his well-known Plates of the Gravid Uterus.

JOHN HUNTER'S PUBLISHED WORKS AND PAPERS.

The following list of John Hunter's Works and Papers has been made up from the biographical notice of him in Pettigrew's "Medical Portrait Gallery," Vol. I., in which the Editor remarks, "He (John Hunter) contributed to the Philosophical Transactions various papers independently of those communicated by Sir E. Home, and furnished as supplements to the writings of others."

1766. Supplementary Paper to Mr. Ellis's Account of an Amphibious Bipes.
1771. The Natural History of the Human Teeth.
1772. On the Digestion of the Stomach after Death.
1773. Anatomical Observations on the Torpedo.
1774. An Account of certain Receptacles of Air in Birds which communicate with the Lungs, and are lodged both among the fleshy parts and in the hollow bones of these animals.
1774. Observations on the Gillaroo Trout, commonly called in Ireland the Gizzard Trout.
1775. An Account of the Gymnotus Electricus.
1775. Experiments on Animals and Vegetables with respect to their power of producing Heat.
1776. Proposals for the Recovery of People apparently Drowned.
1778. A Practical Treatise on the Diseases of the Teeth.
1779. Account of the Free Martin.
1780. Account of a Woman who had the Small-pox during Pregnancy, and who seemed to have communicated the same Disease to the Fœtus.
1780. Account of an Extraordinary Pheasant.
1782. Account of the Organ of Hearing in Fish.
1784. Anatomical Remarks upon a New Marine Animal.

1784. Observations on the Inflammation of the Internal Coats of Veins.

1784. On Introsusception ; and a Case of Paralysis of the Muscles of Deglutition cured by an artificial mode of conveying Food and Medicines into the Stomach.

1784. Operation for the Cure of Popliteal Aneurism. This paper, by Mr. Home, details John Hunter's operation.

1784. The Case of a Young Woman who poisoned herself in the first month of her Pregnancy ; and Experiments and Observations on the Growth of Bones.

1786. Treatise on the Venereal Disease.

1786. Observations on certain parts of the Animal Economy, a second edition of which appeared in 1792.

1787. Observations tending to show that the Wolf, Jackal, and Dog are of the same species.

1789. A Supplementary Letter on the Identity of the Species of the Dog, Wolf, and Jackal.

1790. In this year Mr. Hunter contributed some important matter, as an appendix to a Journal of a Voyage to New South Wales, by John White, Esq., Surgeon-General to the Colony. This consists of :

1. General Observations on the mode of collecting and sending home animals, and on the nomenclature and classification of animals.—2. Description of the Kangaroo.—3. Description of the Wha Tapoan Roo.—4. Description of the Dingo, or Wild Dog of Australia.—5. Description of the Tapoa Tafa, or Tappa.—6. Description of the Poto Roo, or Kangaroo Rat.—7. Description of the Hepoona Roo.

Mr. Hunter also contributed some observations concerning the Anatomy of the Camel's Stomach, and some Notes on the Anatomy of the Jerboa, to Dr. A. Russell's Natural History of Aleppo.

1792. Observations on Bees.

1793. Observations on the Fossil Bones presented to the Royal Society by the Margrave of Anspach. He also delivered the Croonian Lectures on Muscular Action for the years 1776, 1778, 1780, 1781, and 1782.

Posthumous :—Treatise on the Blood, Inflammation, and Gunshot Wounds.

ACCOUNT OF THE SYMPTOMS OF ANGINA PECTORIS, DETAILING THE CASE OF JOHN HUNTER.

Reprinted by permission from Reynolds' "System of Medicine," Vol. IV., Page 560. *"Angina Pectoris and Allied States," by Professor Gairdner, M.D. (Macmillan and Co.)*

"The great comparative anatomist and profound physiologist, John Hunter, died, as is well known, with startling suddenness, in the year 1793; and from all that has been transmitted to us of the circumstances of his fatal illness, and of the symptoms from which he suffered for twenty years before his death, it is evident that the opinion of one, at least, of his most intimate and confidential friends, as well as probably the secret convictions, in the end, of the distinguished sufferer himself, pointed in the direction of the angina pectoris of Heberden as the true nosological interpretation of his morbid state. The detailed posthumous narrative of the symptoms, coming as it does, almost from the very lips of Hunter, and characterised by all his restless activity of mind in the search after truth, forms unquestionably one of the most instructive chapters in the whole history of medicine. There is hardly a sentence in this wonderful narrative which will not repay the careful study of the physician; and although the substance of the whole is here faithfully preserved, the need for condensation will compel the sacrifice of

many of the vivid touches which reveal the mind of genius intent, even amidst physical suffering, upon the mysteries of its own being.

"How far these descriptive touches had been reasoned out into clear conceptions in the mind of Hunter himself does not appear rom the narrative; it is certain, however, that his most intimate and congenial friend, Edward Jenner, postponed for many years the publication of certain highly original observations on angina pectoris (afterwards adopted and in part published by Dr. Parry), from the fear of compromising the feelings of John Hunter by a too obvious reference to his case. It is well established, also, that the case did, in fact, fulfil the anticipations of Jenner, both as to the fatal event, and as to the appearances observed after death. It has rarely happened, surely, that two minds so keenly alive to theoretic truth, and yet so observant of detail, have been applied to any, even the most indifferent obscure case in medicine; for in this instance it is the author of the "Treatise on the Blood, Inflammation," &c., who is both sufferer and narrator, while it is the clear-sighted and eminently truth-loving discoverer of vaccination who forms and announces to us the diagnosis.

"John Hunter 'was a very healthy man for the first forty years of his life, if we except an inflammation of his lungs in the year 1759. In the spring of 1769, in his forty-first year, he had a regular fit of the gout, which returned in the three following springs, but not in the fourth.' In the spring of 1773 (rather more than twenty years before his death) he had the first appalling attack of what may, from our present point of view, be fairly regarded as angina pectoris, though the pain (perhaps from some association of ideas with 'gout in the stomach,' the regular attack having, as stated above, not appeared at the expected time) was in this instance referred to the region of the pylorus. 'While he was walking about the room, he cast his eyes on the looking glass, and observed his countenance to be pale, his lips white, giving the appearance of a dead man; this

alarmed him, and led him to feel for his pulse, but he found none in either arm; the pain continued, and he found himself at times not breathing. Being afraid of death soon taking place if he did not breathe, he produced the voluntary act of breathing by working his lungs by the power of the will.' The 'sensitive principle' was not affected; for three quarters of an hour he continued in this state, when the pain gradually lessened, and in two hours he was completely recovered.

"The next attack was in 1776; it was distinguished, however, by a very decided amount of vertigo, which was not present, apparently, in the first attack; he felt as if he had drunk too much, and was a little sick; on lying down it seemed as if he was suspended in the air; motion in a carriage gave the uneasy 'sensation of going down, or sinking"; motion, either of the head or foot, was insufferable, from the idea it gave of ranging through vast distances. 'The idea he had of his own size was that of being only two feet long.' The special senses were extremely acute; the appetite indifferent; the pulse about sixty, and weak. In this state he continued for about ten days; bleeding was of no service, purging and vomiting (by medicine) 'distressed him greatly'; nothing appeared to be of the least use. From this severe illness he gradually recovered, but only after a long convalescence; and he does not seem to have been ever again perfectly well, having, it is said, grown much older looking in the interval between this and his next severe attack, which was in 1785.

"The illness of April 1785 may be said to have commenced with an ordinary attack of gout, followed by a great variety of anomalous nervous sensations which are minutely described, but over which it is not necessary to detain the reader. Suffice it to say, that from this time onwards Hunter became increasingly subject to paroxysmal attacks, which assumed more and more the characters of typical angina pectoris. The nervous disturbance appears to have been at

first peripheral, *e.g.*, 'a sensation of the muscles of the nose being in action,' an unpleasant sensation in the left side of the face, jaw, and throat, which seemed to extend into the head on that side, and down the left arm as low as the ball of the thumb, where it terminated all at once.' After a fortnight these symptoms of nervous irritation 'extended to the sternum, producing the same disagreeable sensations there, and giving the feeling of the sternum being drawn backwards towards the spine, as well as that of oppression in breathing, although the action of breathing was attended with no real difficulty; at these times the heart seemed to miss a stroke, and upon feeling the pulse, the artery was very much contracted, often hardly to be felt, and every now and then the pulse was entirely stopt.' He had also pains in the heart itself, as well as the diaphragm and stomach, attended with considerable eructations of wind, 'a kind of mixture of hiccough and eructation.' In the most severe attacks 'he sunk into a swoon or doze, which lasted about ten minutes, after which he started up, without the least recollection of what had passed, or of his preceding illness.' The agonies he suffered were dreadful, and when he fainted away he was thought to be dead.

"As in other instances of angina, these attacks were at first brought on chiefly by motion, 'especially on an ascent, either of stairs or of rising ground.' The affections of the mind that were chiefly injurious were anxiety and anger; 'it was not the cause of the anxiety, but the quantity of it, that affected him; the anxiety about the hiving of a swarm of bees, the anxiety lest an animal should escape before he could get a gun to shoot it,' brought on an attack; 'anger brought on the same complaint, and he could conceive it possible for that passion to be carried so far as to deprive him of life; but what was very extraordinary, the more tender passions of the mind did not produce it'; compassion, admiration, etc., might be carried to the extent of tears, 'yet the spasm was not excited.'

'He ate and slept as well as ever, and his mind was in no degree depressed; the want of exercise made him grow unusually fat.'

"Mrs. Hunter, in writing to Jenner, called the disease, even at this stage, 'flying gout.' We have already seen what Jenner thought of it several years before. Hunter himself was probably familiar with Heberden's description, and at all events had assisted in Heberden's inquiry by performing the examination of the very remarkable case recorded in the 'Medical Transactions' in 1772. He himself began to suffer in 1773. That he had realised in some degree the danger of his position, therefore, can scarcely be doubted. He had indeed no unmanly fear of death, and was far too busy to occupy himself with what he would have regarded as weak sentimentalisms about himself. He probably avoided the subject deliberately, and felt himself able to pursue all his various occupations with the same ardour as ever, in the intervals of suffering. But he was deeply sensible of the risk to which he was sometimes exposed by over-exertion, and still more by his uncontrollable temper; he was accustomed to say, that 'his life was in the hands of any rascal who chose to annoy and tease him'; a remarkable expression, and a sad anticipation of the actual ending.

"The close of 1789 brought with it a new set of complications, which may be briefly summarised as loss of memory, and various kinds of visual disturbance, especially the apparent deflection of objects from their true direction; some of the former subjective sensations, mentioned in the attack of 1776, returned upon him. 'Dreams had the strength of reality, so much so as to awaken him; the disposition to sleep was a good deal gone, an hour or two in the twenty-four being as much as could be obtained. Neither the mind, nor the reasoning faculty, however, were affected'; indeed he reasoned most acutely in regard to his own visual derangements, and pursued the questions suggested by them in physiology with a keenness, which was quite characteristic.

"At last the busy, ever active mind was to cease from its labours, and the strong, much-enduring bodily frame, wearied out and spent in the service, was to give way. His recovery from this indisposition was much less perfect than from any of the others; he never lost entirely the oblique vision; his memory was in some respects evidently impaired, and the spasms became more constant; he never went to bed without their being brought on by the act of undressing himself; they came on in the middle of the night; the least exertion in conversation after dinner was attended by them. Even operations in surgery if attended with any nicety, now produced the same effects.

"The end is well known. There is reason to think it was almost foreseen by himself. A dispute of a painful, but not, after all, of a very serious or overwhelming character, had embittered his relations with the governors of St. George's Hospital. On the 16th of October, 1793, he determined to be present at a meeting, where, however, he apprehended a personal dispute. He expressed to a friend the feeling that such a dispute might be fatal to him, but went nevertheless. Something that he said in the Board-room was noticed, and flatly contradicted. He stopped, left the room in a silent rage, and had just time to gain the next room, when 'he gave a deep groan, and fell down dead.'

"The appearances in the dead body were complex. The pericardium was very unusually thickened; the heart very small, its muscular substance pale; the coronary arteries were converted into open bony tubes; the valves of the left side of the heart also were involved in a similar degeneration; the aorta was dilated, in its ascending part, to the extent of one-third. The carotid and vertebral arteries within the cranium were also bony, and the basilar artery 'had opaque white spots very generally along its coats.' The structure of the brain itself was normal."

JOHN HUNTER'S LOVE FOR THE FINE ARTS.

That John Hunter had a love for the fine arts as well as his brother William, whose choice collection of pictures is in Glasgow, the following extract from a note to Sir James Paget's oration will show :—

"I am indebted to Messrs. Christie and Manson for the opportunity of reading the sale catalogue of Hunter's collection and library. About 120 pictures were sold for £800. They were chiefly by old masters, including some of the best; and there were several of Hunter's chief contemporaries—Hogarth, Reynolds, Southerbourg, Zoffany, and Zuccarelli. Among them also were some medical portraits, including one of Harvey, by Janssen. The engravings, including a large collection of Hogarth's, sold for about £140; the 'curiosities' fetched about £200; and the books, including, I think, nothing significant, about £160. The proceeds of the four days' sale in January and February, 1794, amounted to nearly £1300. Mr. Taylor, who was so good as to show me the catalogue, thought that a similar collection would sell now for £10,000.

"It is hard to say whether Hunter's love of collecting pictures was connected with any real taste for the fine arts. I think it was, and that in this was the only instance of his studying anything but science. Mr. Rumsey, the best reporter of his lectures, says: 'It has been said of Mr. John Hunter that he had a great dislike to works of imagination, his long study of matters of fact having rendered every other species of writing disagreeable to him.'"

He had strong convictions on politics. There is a letter of his in which he writes about his museum: "If your friend is in London in October (and not a Democrate), he is welcomb to see it; but I would rather see it in a blaze, like the Bastile, than show it to a Democrate, let his country be what it may."

NOTES ON THE ILLUSTRATIONS OF THE MEDICAL PREPARATIONS.

Fig. 1, p. 92, is an illustration of the Ovarium and Corpus Luteum cut through; the latter of these, even at this time, had an apparent cavity.

Fig. 2, p. 92, is the internal surface of a portion of the Decidua, considerably magnified to show its peculiar cribriform or lace-like appearance.

Fig. 3, p. 92, is a part of a Uterus, with a portion of the Placenta, to show the mode in which the maternal blood-vessels communicate with it. *A* The substance of the Uterus, separated from the Placenta, and turned back. *B* The surface of the Placenta, by which it is attached to the Uterus, covered by the Decidua. *C* The angle of reflection, at which the Uterus is turned back upon itself. *D* The edge of the Placenta. *E* The Decidua covering the Chorion.

Figs. 1 and 2 are taken from William Hunter's great work, *The Human Gravid Uterus.* Fig. 3 is taken from the plates published with the works of John Hunter, edited by James F. Palmer.

The illustrations Nos. 1 and 2, p. 184, indicate the celebrated preparations from John Hunter's own hands of cockspurs flourishing in the cockscomb; No. 3 is a human incisor living on a cockscomb; No. 4 is a representation of portions of skin, each originally not larger than a pin's head, taken from the brawny part of a boy's arm, now flourishing on an ulcer of the leg of an old lady above sixty! These are the original woodcuts used to illustrate Sir William Fergusson's Hunterian Oration of 1871.

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